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DEPARTMENTS IN WAR.

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I.—THE ART OF LEADERSHIP.

IN the struggle for existence a nation is, even in the midst of profound peace, at war. Actual hostilities, whether on sea or land, are merely the culminating point for the time being, the outward and visible sign, of this ever-present conflict. A vast amount of thought and of labour has, throughout the history of the world, been expended on the method of conducting hostilities in the field, with the ultimate object of reducing war to a science, whereas but little scientific thought has been given to the methods by which a nation may be conducted to success in its struggle for existence. Actual war, the public calamity, in which Army fights Army, and Navy fights Navy, the blood of men is shed, women and children starve, famine and disease do their work, and of which the superficial cause is easily traceable, is apparent, and can easily be realised by all. The ever-present struggle for existence, slow in its operation, invisible, due to deep-seated causes, to the laws of nature and the process of evolution, is, on the contrary, more often unrealised by man.

Glancing back through the pages of history, it becomes evident to the student that the wars of the past, which were apparently due to the ambition of an individual, to a national love of fighting, or to predatory instinct, were, in reality, could nations but have recognised the fact, inevitable from the moment at which the combatants found themselves face to face in the struggle for existence. The rise of England as a Power in the world was possible only through the downfall of Spain, even as the rise of Rome was dependent on the destruction of Carthage.

Prussia was doomed to destruction save through the defeat of Austria; the German Empire could only come into being with the defeat of France, and it can only develop into a world Power through the downfall of the British Empire. "One man's gain is another man's loss."

A nation, no more than other things in nature, can stand still: it must, in the process of evolution, rise or fall. Hence the struggle

for existence with its inevitable corollary, war. War is no game; it is a crisis in the life of a nation. It is by the constant study of war alone by the whole manhood of a nation that success in the struggle for existence can be achieved. Hence it is that those nations which are faced by implacable foes, fearing for their existence, have adopted universal service; and that it is those nations alone which, having had nought to fear in the past, and believing themselves invulnerable, have turned their attention away from war, by which they achieved greatness, and are content to rest their hopes of continued success on the accumulation of riches. Vast riches failed to save the Carthaginians or the Spaniards when pitted against the virile qualities of poor but martial races; they will similarly fail in the future. Modern nations which, through fear of their neighbours, have adopted universal service are, in reality, vast fighting machines, prepared at all points, constantly tested in make-believe war, and in readiness to fight to the death. Canada, through fear of her powerful neighbour, is tending towards universal service; Natal, through fear that Great Britain will be found unequal to the task of absorbing the inimical Dutch population of South Africa, is even now taking elementary steps in a similar direction.

War is no longer an art, pure and simple, in which the genius of a leader could outweigh lack of numbers, faults in organisation, armament, discipline, or in the thousand-and-one details which go to the make-up of the vast national fighting machine known as a modern nation in arms. It has developed into partly art, partly science, in which the moves and counter-moves are clearly apparent to the trained military expert, and in which the almost inevitable results of certain given situations can be clearly foreseen and outlined.

Lack of science in the conduct of war can no longer be counter-balanced by a preponderance of art. So-called military genius, the result of years of constant study and military thought superimposed on a foundation of certain characteristics, towered above the general ignorance of the past; whereas to-day, when the immutable principles of strategy, on which success in war is based, are commonly studied by all the leaders of a nation in arms, the military genius can be but little removed above the common herd. Sound peace strategy and careful preparation, backed by the whole force of a nation, can alone win success in modern times. An untrained nation, with untrained leaders, is doomed.

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In ancient times the object of war was the annexation of territory or the capture of booty; armies lived on the inhabitants of the country through which they operated. Every man was, through the mere conditions of life, trained to the use of arms, while hereditary chiefs or officers, without special attainments except physical prowess, led the rank and file composed of the lower classes. The leadership of an army or fleet was an art which depended for success almost entirely upon the genius of the general or admiral. Battles were fought and won by shock tactics alone. Invention, however, follows hard on the heels of civilisation, and with each new military invention the fighting forces of a nation become of a more complicated nature. The power of striking the adversary with missiles from a distance forced armies to carry with them a sufficiency of such missiles, and

hence we have the necessity for lines of communication and for the defence of the same. As civilisation progressed, moreover, so did new interests, commercial and otherwise, engage the attention of the peoples; and the conduct of war, by degrees, became relegated to standing armies. It, in time, came to be regarded as an unwritten law that the non-combatant portion of the inhabitants should not be hurt more than was necessary, but that the efforts of the combatants should be directed to the defeat of the adversary's armed forces. Uniforms were introduced; supplies must be carried; wounded, both friends and enemies, must be cared for. Hence the gradual introduction of departments.

With the appearance of gunpowder, of large and small guns, of railways, of steamships, of telegraphs, the efficient direction of these departments became of first importance, and an Army or a Navy became, day by day, more of a vast machine of which each component part required a high standard of technical knowledge and training. In the present day a fleet is a machine of which each component part, while differing in size, power, or class, is yet a complete machine in itself, built up of numerous pieces of mechanism, each one the outcome of many years, or even of centuries, of scientific thought, maintained in working order by a large staff of trained experts. In a ship of war the mechanism constructed for the purpose of inflicting actual damage on the adversary, the combatant portion of the machine, so to speak, is but small in comparison with the different mechanisms which exist to enable the combatant portion to act with efficiency.

Be any one piece out of gear, composed of bad material, built on a faulty system, ill-directed or badly served, the whole machine of the ship is in danger of loss of efficiency, or even of breakdown, while the vast machine of the fleet, through such loss of power, may experience defeat. And so, similarly, with an Army of to-day. It is a machine of which the actual fighting portion is but small compared with the departments on which the success of the striking portion depends. These departments are numerous: supply, transport, intelligence, telegraph, signalling, medical, veterinary, remount, ordnance, and others, each one of a highly technical nature, and dependent for success in its working on a host of minor details, which the expert alone is able to appreciate at their just value. A breakdown in any one of these departments may, at a critical moment, cause the breakdown of the whole machine, with the consequent defeat of the nation in war, and failure in the struggle for existence.

Interference by the ignorant man, no matter who he may be, in the province of the expert, may well cause such a breakdown.

It is not given to any man, however great the intellect with which he may have been endowed by nature, to train himself as an expert in more than one, or it may be at most in two different subjects. Examples of the great painter who was also a great musician are wanting, and yet painting and music are both branches of art. The world has given us but one great master in the more closely allied arts of painting and sculpture, though many lesser lights have been adepts in both. Strategy and tactics are both branches of the art of war, and while history gives us some few examples of great generals who have been masters of both, it gives us many of those who have been expert in the one and a failure in the other.

Napoleon's combination at Jena was carried to success by the fact that his lieutenant, Davoust, who was entrusted with a difficult opera-

tion requiring expert knowledge in both strategy and tactics, was not found wanting; his combinations in the Waterloo campaign failed chiefly through the fact that Ney, the most brilliant of tacticians, was but an indifferent strategist; and it is possible that had Napoleon possessed the services of Davoust in the latter campaign the result would have been different and the face of Europe altered. Again, in the Trafalgar campaign, Villeneuve, seeing only the dangers to be overcome and failing to keep his attention fixed on the great object to be gained, "took counsel of his fears," permitted himself to be checked in the prosecution of Napoleon's plans, and brought the whole magnificent combination to ruin. The general who would succeed, who would avoid needlessly shedding the blood of his men and bringing defeat on his country, who, if he be a subordinate, would successfully carry out the task entrusted to him by his chief, must be a man whose life has been given up to the study of war and of strategy, whose mind is accustomed to the consideration of the broadest issues, self-taught, self-trained, whose brain has been habitually exercised in the solution of military problems, to whom each situation as it occurs is no novel or unsuspected contingency requiring a sudden and lightning-like decision, but a mere amplification or variation of one long since considered, weighed, and solved.

The art of leadership in war, partly art, partly science, is the most difficult of all, and requires qualities which are not often found in the same individual, supplemented by life-long thought and study of the art of war; great bravery, moral as well as physical; determination, prudence, self-reliance, wisdom, cunning, the spirit of the gambler, combined with the power of hard work, of invention, knowledge of self and of human nature, of how to be silent and of how to talk; but all these are useless without the knowledge of war and of the machinery of it, of the methods by which that machinery can be put into motion and of how it can be utilised to the full, of every possible move and counter-move, of each and every trick, subterfuge, and artifice of the great trade of war.

And perhaps the greatest of all qualities is that of trusting subordinates. Mahan, indeed, tells us so. The company commander who fails to trust his section leaders will have a bad company; the battalion commander who, having experience only of regimental work and a detailed knowledge of the duties of his subordinates, apt to command all the companies of his regiment himself in place of forcing those subordinates to do their own work, will have a bad battalion; the colonel who, versed in knowledge of war but ignorant of regimental details and knowing his own ignorance, trusts his subordinates, will surround himself with good officers and have the better battalion. The general who fails to trust his subordinate generals and his heads of departments is a bad leader, and his army will fail in the test of war. He who, proud of his detailed knowledge of departmental, staff, and regimental work, constantly interferes in the duties of his subordinates, has neither the time nor, as a general rule, the ability to give thought to the strategical and tactical problems by the correct solution of which success in war is alone to be gained.

It is not of such stuff that men are made who lead troops to victory. A narrow mind does not gain success in war. How, indeed, should a man who has spent his life in committing to memory the million constantly changing minute details of a modern military machine, who has consistently narrowed his intellect by the contemplation of the petty,

find the capacity to grasp the great principles of war? It is given to God alone to note each sparrow as it falls to the ground, and at the same time to direct the universe; with the limited understanding of humanity, the fall of the sparrow must be delegated to subordinates. The wise man will be content with a general knowledge of principles underlying the existence, organisation, and action, of the several units which go to make up the force with which he is entrusted, and confine his best endeavour to the study of the means by which he intends to wield the whole. Such a one, wise in the knowledge of his own ignorance, will grant his expert subordinates absolute freedom of action; and, while admitting no excuse for failure, will yet give every assistance in his power to lighten the labours of those subordinates and render the attainment of success more certain. Such a man will be more than repaid by the energy, loyalty, and intelligence displayed by all under his command, and if he fail—for it is not in man to command success—by the sympathy and friendship displayed on all sides. The narrow-minded and ignorant man, will, on the other hand, meet with obstruction or passive resistance combined with a scarcely-veiled contempt from his subordinates which will render his task one of increasing difficulty, while each subordinate hunted from above will similarly hunt those beneath him; and the parts of the whole machine, in place of that smooth, well-oiled movement in combination towards one common object, will jar and clank with the ever-increasing friction of jealousy and ill-temper, jerking, dragging, pulling different ways, until the whole machine, rendered useless, can alone be brought into gear by complete re-construction.

But interference, in however slight a degree, with subordinates is impossible to the man who, having made a close study of strategy and the higher branches of the conduct of war, has learnt that success is dependent on the close observance of certain immutable principles which are as true to-day as they were in the days of Hannibal; and that constant watchfulness and care, the whole attention of the leader, must be given to the application of these rules, the slightest infringement of which may in any case, and most certainly will if committed in the face of a highly-trained adversary, lead to defeat and disaster. Such a one, in his knowledge of war, dare not give up his time and waste his energies in the detailed work of his subordinates; interference is possible only to the ignorant.

It is not too much to say that one little mistake in strategy may well cause the downfall of a nation; and that every thought of a leader must be given to the study of the strategic situation.

An illustration will not perhaps be out of place. In the first Punic war, the Romans, having with great labour prepared a fleet with which to strike for the command of the sea, found themselves, at the outbreak of war, in a condition of unreadiness in face of a ready adversary. In place of declining an engagement until the whole fleet was in a condition for concentrated action, they detached a portion in advance which was promptly overwhelmed and destroyed by the whole Carthaginian fleet. By this faulty strategy they jeopardised their existence as a nation, and only escaped through the incapability of their adversaries.

In 1870, the French, unready in face of a ready adversary, in place of declining an engagement at the expense of an evacuation of territory, pushed forward detachments to the frontier which were overwhelmed by the main forces of the German armies. This strategical mistake, or

rather crime, induced by so-called political considerations, made in face of a nation in arms which did not fail to seize the opportunity, initiated the demoralisation which afterwards took such a hold of the French armies, and was the first step on the road to national defeat and humiliation.

The application of strategical principles to any given situation in war is generally, especially in modern times when untrained public opinion is a factor of such power, when this and that illogical opinion, or this and that petty and insignificant interest must be combated, a matter of difficulty so great as to require the whole and undivided attention of an expert military leader carefully trained to the consideration of strategical problems.

A general in these days must be an expert in either strategy or tactics; it would be better still that he should be an expert in both. An expert in these subjects may hardly hope to be also an expert in any departmental work; if formerly expert as a subordinate, whether it be as an infantry, cavalry, artillery, engineer, staff, or officer of any department, he must have discarded all detailed knowledge, retaining only the broad outlines of action of all branches, his special branch included, in favour of the study of strategy and the art of war. So only may a man hope to fit himself for the responsibilities of leadership.¹

It is but a mere platitude, and yet one which has apparently never been really recognised by the British nation, that the higher the rank, the greater the value of knowledge. Ignorance in a private is of no importance; ignorance in a company commander is of little more; whereas ignorance in a battalion commander may have grave results to the Army. Ignorance in the general of a brigade must always be a danger to an army; in a general of a division may at any moment lead to defeat, and will most certainly, sooner or later, plunge his chief into difficulties; while ignorance in that chief will, if he be pitted against a highly-educated soldier, lead to disaster. Ignorance in the leaders of a nation, or absence of leaders, must inevitably lead to failure in the struggle for existence.

It follows, therefore, that the education and training of the chiefs of the armed forces is a matter of vast import to a nation. It is only by selection on account of certain characteristics from amongst the junior ranks of officers, followed by the constant and careful training of those selected officers that a nation in modern times may hope to obtain men fitted to undertake the leadership of its forces in war. But without such leaders a nation must in modern times fail in war, that is, in the struggle for existence.

It is not solely by constant campaigning against savages that leaders are formed. Such experiences are, in fact, calculated to teach false lessons, which are vividly impressed on the memory by the excitement of battle, to narrow the mind, to give birth to the habitude of underrating the adversary, to give undue prominence to personal prowess, and to put out of sight the necessity for strategy, which leads to the neglect of study.

¹ It would seem to follow, therefore, that in addition to a Staff College, there should exist a school for the training of the future leaders of an army, in which all detailed knowledge should be discouraged, and to which officers carefully selected for their possession of certain qualities, combined with an aptitude for the study of broad questions of strategy, should alone be sent.

Wellington, the General of Sepoys, has long been upheld as an example which proves the converse; but he led troops but little better armed than the adversary, and he was, moreover, a deep student of strategy and the art of war. In modern days, however, the armament of civilised nations is beyond all comparison superior to that of savages, and leaders, who had gained a reputation in our wars with the Zulus, Dervishes, Afridis, etc., did not always maintain it when pitted against the Boers; while, it is certain, that proved efficiency against the Boers will not of necessity ensure efficient leadership against Germans, Frenchmen, or Russians.

What man who has played racquets, lawn tennis, or billiards, has not experienced the demoralisation which results from constant play against a feeble adversary?

The art of leadership is to be learned from the study of the great masters of war, combined with hard thought and some personal experience, and not from petty personal reminiscence alone. It is only by a scientific education in the art of war that the leader can be trained.

The officers of an army may be divided into three main classes: Regimental, Departmental, and Staff. It is from these three that the future leaders of an army must be selected. Let us repeat, in order that we may fully grasp the requirements of a scientific training in leadership, that a leader must be possessed of certain inborn qualities and must also be educated and an expert in strategy and tactics as well as possessed of a general knowledge of the principles underlying the action of infantry, artillery, cavalry, engineers, supply, intelligence, remounts, signalling, telegraph, railway, ordnance, medical, and pay departments. It must be clear that if efficient leaders would be obtained, it is necessary to adopt a system in the education of all officers of the Army.

A leader is usually and rightly selected from the ranks of those who have had training and experience on the staff; for it is the case that the duties of a staff officer enlarge the understanding while regimental duties are apt to narrow the mind.

A staff officer, or the head of a combatant department, who is also a staff officer, can only carry out his duties with efficiency provided he possess not only a detailed knowledge of his staff or departmental work, and a general knowledge of the action of the three arms, but also an expert knowledge of strategy and tactics.

The subordinate departmental officer must, in order that he may carry out his duties, possess a detailed knowledge of the work of his department and a general knowledge of the action of the three arms. But, more than this, he must fit himself to take the place of the head of his department—that is, as an officer of the staff, and with this object in view he must be constantly trained in strategy and tactics.

The regimental officer must, in order that he may efficiently carry out his regimental duties, possess a detailed knowledge of his special arm, whether such be infantry, cavalry, or artillery; while, as he rises to higher rank, so should his general knowledge of the principles underlying the existence and action of the other arms and of the various departments increase; and, concurrently with education on these subjects, should run the training in strategy and tactics, by an expert knowledge of which he can alone be fitted to undertake the responsibilities of a staff officer or of leadership. Up to the time of the Boer war, the British regimental officer was expected to make himself acquainted with the most absurdly unimportant details of the lance-

corporal's duties; he was forced to be highly qualified as a grocer, tailor, boot-maker, lawyer, nurse, cook; he must know the voluminous and constantly varying regulations by heart; while there was but little necessity for him to be a soldier. Will any man who has once passed through the ordeal of a general's inspection of the past ever forget the toil and anguish with which he struggled at the last moment to learn by heart the thousand and one details, the duties of the corporals and sergeants? Will he easily forget that little card of information compiled for him by the over-worked colour-sergeant immediately before the inspection, and which he so carefully secreted up his sleeve; can he ever forget those complicated fines for drunkenness and for absence without leave which, notwithstanding the fact that they are plain to read in the Regulations, must nevertheless be acquired by heart by the unfortunate officer who would prove to the general his ability to lead his company or, if necessary, his battalion in action? Fortunate it was for the British nation that, in the moment of stress in the Boer war, the British officer displayed a little-to-be-expected capacity to cast to the winds these minute regulations, to think and act for himself, and to rise from that slough of mental degradation into which a bad system and a hopelessly faulty military education had done their best to cast him. And the staff officer of the past, taught at the Staff College the elements of strategy and of the art of war by the man who was surely the best and most practical of instructors and one of the greatest thinkers of modern times, but thereafter overworked, up to the eyes in courts-martial, in unnecessary returns, in the superintendence of grocery establishments, checking this, that, or the other, employed in everything indeed, save only in the study of the art of war, on his knowledge of which would depend his efficiency, fossilised, and became a creature of petty detail and routine.

Marvellous indeed it was that the British Army could produce leaders capable of commanding its divisions, brigades, and departments. A detailed knowledge of all departments is impossible, and is by no means to be desired; but a general knowledge of the principles of the method of working of the whole machine is a necessity to every officer of the Army, lest, in his ignorance, he interfere in the duties of some subordinate officer who is nevertheless an expert in his own particular branch.

But there is another reason. Great Britain goes to war unexpectedly, without previous thought or preparation. She suddenly discovers, after some checks and reverses, that her army must be expanded to double or treble its size, and, as a consequence, she pours in reinforcements of partially-trained auxiliaries.

The expansion of an army entails a corresponding expansion of all departments, which calls for the services of large numbers of expert officers. Such expert officers in sufficient numbers, can, needless to say, under the present voluntary system, never be forthcoming; and that is in itself good reason for the education of all Regular officers in general knowledge of the functions of departments in order that, in war, these departments may be expanded with men who are, at the least, capable makeshifts. Nothing can, in reality, replace expert knowledge in departmental work; but with Great Britain war is neither a science nor an art; the machinery, entirely inadequate, and which is therefore made up of makeshifts, is out of gear from the commencement, and it therefore becomes the duty of each soldier to fit himself by constant study to act as an efficient makeshift. The fact that he be an expert in

horses will by no means debar him from employment as a railway staff officer or in the Ordnance Department; while, if he be an expert in ordnance, he may at any moment find himself selecting horses for remounts. There is no time, when Great Britain goes to war, for the selection of officers best fitted to fill certain positions; the machine must be made to work somehow, and at once. It becomes the duty of the British officer, therefore, in peace-time to acquire a broad knowledge of the functions of every single department in addition to the retention of any expert knowledge he may possess in any particular department.

But the necessity for expert knowledge in departmental work is, in modern times, undoubtedly becoming a source of difficulty as regards leadership, for it unavoidably leads to division of control. The commander-in-chief of an army will naturally surround himself with officers as heads of departments, each one of whom is an expert in his own particular line; and it is equally natural, and indeed right, that these heads should do their utmost to decentralise their work amongst local expert representatives placed at different points throughout the theatre of war. It follows automatically that the commander-in-chief will hold his heads of departments responsible for the efficiency of the whole department throughout the theatre of war; and that these heads will prefer to hold a local expert subordinate responsible in a certain district rather than the general of that district, his superior in rank.

Thus each local representative will find that he owes duty to two masters: to the expert head of his department; to the general commanding his district.

The Bible tells us that no man can serve two masters; and never was this truth more clearly demonstrated than in the Boer war.

Where the general of the district is a broad-minded man, with knowledge of the art of war, and can clearly recognise that detailed and expert knowledge of departmental work is beyond his province, he will avoid all interference with his departmental heads, and difficulties will not arise. When, however, the general considers himself to be an expert in the technical knowledge of a department, and can find or make time in which to dabble in the work of the department, he will quickly disarrange and upset the whole of its organisation in his district, and will, that which is worse, render efficient combination between the department in his district and those in the neighbouring districts impossible.

Or there may be other reasons: the general may have other matters to take into consideration which materially affect the efficiency of the department, and he may be drawn or forced into a course of action of which the result must be the ruin of efficiency.

In such a case the subordinate, the local head of the department, will find himself in a position of exceeding difficulty. On the one hand, his expert knowledge will enable him to foresee the results of the general's intended action, and his loyalty to his expert chief at headquarters will demand of him opposition to the will of the general. On the other hand, the general will demand implicit obedience, and will regard loyalty to the departmental chief as disloyalty. To which of these two chiefs does he owe duty? It is obvious that he cannot loyally serve both.

He is indeed in an unfortunate predicament; for loyalty to his general will not save him from the displeasure of his expert chief when the inevitable breakdown occurs; and neither will loyalty to his expert chief save him from the displeasure of the general whose will he has

opposed; whereas, if he attempt to serve both he will incur the displeasure of both and bear all the blame.

In such circumstances there are three courses open to him:—

1. To trace the cause of the general's attitude, and to do his utmost to remove that cause.
2. To remember that his first duty is to his country, and, disregarding his future prospects, do his duty with unswerving loyalty to that country.
3. To show the white feather, and ask to be removed elsewhere.

Whichever course he may adopt, the work of this department, labouring under such disadvantages, will be bad.

It must be patent to all that the initial fault lies in the fact that the departmental heads are held responsible for their departments in outlying districts. But is any other course possible in modern times? A nation, engaged in war, despatches in command of its army the most capable general on which it can lay hands, and rightly holds that general responsible for the conduct of operations in the theatre of war. But there are nations which are by no means content to implicitly trust the general, but despatch a civilian representative to the seat of war, who, though in chief command over the soldier, is at the same time not made responsible for that soldier's possible failures.

Is this also a faulty system of leadership; or is it a necessity? If the civilian representative be a master mind, he will recognise his own incapacity to deal with military problems, will sink his superior position and, acting practically as a subordinate to the general, will confine his attention to giving him assistance in political questions. If, however, he be a narrow mind, he will cause endless friction and, in all probability, defeat.

It therefore comes back to the original question of efficient leadership.

Some civilians found time, in the Boer war, to learn the necessity for self-effacement, while soldiers were granted time in which to study and learn the art of leadership; not so will be the case in a war against a nation in arms. Interference on the part of civilians, or ignorance of the art of war in officers of the military machine, whether of the sea or land, will, in modern times, when faced by the military knowledge and the perfect machine and trained leadership of a nation in arms, bring defeat, quick, certain, and decisive.

Knowledge of the art of war and strategy is incompatible with a too extensive detailed knowledge of the work of subordinates. In modern times, of so complex a nature is the military machine that each part requires the delicate handling of the expert; and no man may hope to acquire more than the technical knowledge necessary for the handling of one such part combined with a general knowledge of the action of other parts and a deep insight into the methods of action of the whole machine.

It is this latter, the science of strategy and grand tactics, on which the success of the machine must depend; and as a soldier rises in rank, so must he oblige himself to discard all detailed knowledge of any one part of the machine in favour of the study of this science.

So only may he hope to render himself an efficient leader. The bad leader will always make bad subordinates, whether he be leader of a Nation, of a Navy, of an Army, or of a part of an Army.

The struggle for existence consists of three main branches: peace strategy, preparation for war, and the actual delivery of the blow.

The struggle for existence is daily becoming more acute. A nation, in the midst of peace, as in war, must be directed by strategy. A nation directed by men uneducated in the art of war will lack preparation and efficient intelligence; it will be surprised by the outbreak of war; its armies or its navies, or both, will be found insufficient, or inefficient; its subordinate leaders will reflect the ignorance of their superiors, and it must sooner or later, in modern times, meet defeat.

God help the modern nation of which the leadership in the ever-growing struggle for existence is entrusted to many men who are incapable or unworthy the trust.

II.—INTELLIGENCE.

Intelligence is one of those departments the necessity for efficiency in which only becomes apparent to the uneducated soldier or the ignorant nation after the outbreak of war.

An army in possession of good intelligence pitted against one without such intelligence is, so to speak, a man who can see, pitted against an adversary who is blind. It is principally this fact which accounts for the minor successes which are always gained by guerillas, unorganised and untrained men of the country, over the well-organised and well-trained troops of the invader.

Lord Wolseley tells us:—"Nothing was more remarkable about Napoleon's personal conduct of a war than the skill and energy he always displayed in his arrangements for securing, at every phase of a campaign, the earliest and best intelligence of all that was taking place in the theatre of war, whilst he carefully concealed his own movements and intentions from the enemy. He lays it down as a maxim that the general who has to remain in ignorance of his enemies' proceedings is ignorant of his trade." ("The Decline and Fall of Napoleon.")

This might equally be said of a nation; the leaders of a nation which fail to obtain good and accurate intelligence of the actions of possible enemies in its struggle for existence are ignorant of their trade, and unfit to be entrusted with the destinies of a nation. But this is a fact which is patent to those nations alone to which the struggle for existence is apparent. Ignorant, undisciplined, and untrained nations, to whom the possibility of war is far off, will have ignorant and untrained leaders; men incapable of appreciating the strategical situation in the struggle for existence, incapable of preparation for war, incapable of obtaining good intelligence, and to whom the advent of war comes as a complete surprise. Such a nation has no more hope in the struggle for existence against modern trained nations than has the army, led by an incapable general, or rather by many incapable generals, against the army led by the expert strategist.

Good intelligence of the enemy's movements which enables a general to appreciate the situation, to foretell with some certainty his

intentions and future movements, and to strike with his whole force at that enemy's most vulnerable point is the first step towards victory.

Without it a general is blind and helpless, and so is it with the leaders of a nation. It was the correct grasp of the strategic situation of Prussia in the struggle for existence which enabled Moltke and Bismarck to decide on a definite object in their peace strategy, to prepare for war with Austria, to precipitate it at their own convenience and win the leading place in Germany.

It was similarly this correct appreciation which enabled these two experts in strategy to humble France four years later, and to weld the German Confederation into the German Empire. It was the action of the German cavalry in 1870, which, scattering its patrols far to the front, not only formed an impenetrable screen, but rendered secrecy of movement on the part of the French Armies impossible, which went far to win success.

It is the art of leadership which turns its first attention to the gaining of accurate intelligence on which it can base its plans which will secure success, whether it be in the struggle for existence or in the theatre of war, against an ill-directed adversary.

The Boers, that petty nation of farmers, but well led in peace strategy, partially prepared, temporarily humbled the overwhelming might of the British Empire. The reasons are not far to seek. Great Britain, her thoughts given to commerce and party politics, unable to grasp the possibility of a struggle for existence, failed to appreciate the significance of the situation in South Africa.

A nation in modern times—even the great British Empire—is ever at war in the struggle for existence; and its leader or leaders are, whether they desire the honour or no, in reality the general in command of the national machine. A nation, even as an army, which is directed by a Council of War, is hampered from the very outset in its operations, and the greater the number of these leaders, the less the chances of success, whether it be in the struggle for existence or in actual military operations.

Strategy does not commence with the first shot fired and end with the last shot fired; for there is peace strategy as there is war strategy. The first move of German strategy directed against France was made in 1866, before the treaty which terminated the war with Austria was signed.

Kruger's first step in strategy, directed against Great Britain, which culminated in 1889, was made the year after Majuba. Peace strategy is, in Great Britain, termed Foreign, Colonial, or Home Policy, each under a different head and directed by men untrained in the art of war or leadership. As might have been expected in such circumstances, every step of British peace strategy in South Africa was faulty, or was most conspicuous by its absence.

It is the duty of a leader or leaders of a nation to examine into the strategic relations existing between the nation, which is a force, and other nations, possibly opposing forces. The strategical situation in South Africa, after Majuba, stripped of the mass of irrelevant matter commonly known as "political considerations," was a problem of extreme simplicity, a correct appreciation of which would have saved Great Britain the war in South Africa in 1899.

The Boers were a new-born nation; a nation cannot stand still, it must rise or fall.

The future of the Boers was therefore bound to be one of four things:—

1. Rise as a Dutch Power inimical to Great Britain.
2. Rise as a Power friendly to Great Britain through the influx of British emigrants.
3. Disintegration owing to lack of wealth, or to internal dissension.
4. Annexation by another Power.

In the first of these alternatives war was inevitable; in the third and fourth war was probable.

The fact that the Boers had but just defeated Great Britain in war rendered the first of these alternatives the more probable. The introduction of Dutch as an official language in Cape Colony should have placed beyond doubt the intentions of the Boer leaders; the discovery of gold in the Transvaal removed one disintegrating force; the careful suppression of the Uitlander by the Boers removed the other; while the Jameson raid finally rendered war inevitable. Had thought been given to this problem, an efficient intelligence department would have been established in sheer self-defence by Great Britain in South Africa, the intrigues of Kruger exposed, vast preparation for war made by Great Britain, and the war of 1899 would, in all probability, not have taken place, or would have taken place earlier and been finished in six months. But the fact that war was inevitable was not recognised by the British leaders until after it had actually been declared; while a British statesman stated that the British Government knew no more than the man in the street—an admission of an incapacity in the leaders of the nation which is surely without parallel in the history of the world, and which is sufficient in itself to explain the otherwise inexplicable absence of all preparation for war by Great Britain as well as to give all Englishmen matter for earnest anxiety for the future existence of the nation. Great Britain, lacking efficient leadership, lacked good intelligence, a definite object in her peace strategy, and a plan of operation or preparation for this war which was inevitable; and caught unprepared, but just escaped destruction at the hands of her insignificant adversary.

Without efficient preparation for war, a nation is, in modern times, doomed to meet defeat; without a definite object in her peace strategy there can be no really efficient preparation for war; and without good leadership the necessity for good intelligence, for scientific thought, or for peace strategy is not apparent.

* * * * *

Intelligence may be classed under two heads:—

1. Peace intelligence.
2. War intelligence.

As a general in command of an army bases his plan of operations on the information at his disposal of the enemy's forces in the theatre of war, so must the leader of a nation base his plan of action in the struggle for existence on the information at his disposal of all possible opposing forces in his theatre of war, that is, in the whole world.

But, as in the case of a general, the leader of a nation may seldom hope to obtain perfect intelligence, and must, in consequence, act not on certainties but on probabilities.

Hard and scientific thought on the national strategical problems is every bit as important in the leader of a nation as in a general. He, equally with the general in the field, must decide which is the decisive point in his theatre of war; in which portion must he assume the offensive; in which portion must he remain on the defensive; from which point is the national existence most threatened, and how shall he render that threat inoperative.

The better and more complete the information on which he can base his plan of operations, the more certain will be his success as director of the destinies of his nation. The general in the field depends for his information on the war intelligence organisation; the leader of the nation on the peace intelligence organisation. But these two branches are in reality one, for the peace intelligence is the great central organisation of which the branches ramify throughout the world; and as war becomes, first inevitable, and, later, imminent, in any part of the national theatre of war, so should the local branch be strengthened until it be fitted to meet the needs of the general who will undertake the leadership of the military forces.

It is therefore clear that the central organisation, with its branches, should be built up with a view to war, whether on sea or land, in any part of the world; and its strength in any given locality will depend on the power for good or ill of the population of that locality. As has been shown, the Boer nation, after Majuba, was a factor of the highest importance in the strategical problem of the British Empire, and was calculated in certain eventualities to threaten the very existence of the Empire.

Thus the local branch of the central intelligence organisation in South Africa should have been gradually strengthened with a view to war; and, as the connection between the intrigues of Kruger and of certain Continental Powers became more apparent so should the local branches in the latter countries have been strengthened.

As the aim of peace strategy is success in war, so should the aim of the central intelligence organisation be the efficiency of the local branch in the theatre of war, and thus it is that the requirements of intelligence in war will dictate the principles to be observed by the central organisation in peace.

* * * * *

WAR INTELLIGENCE.

Intelligence in war, on land, which is gained by force and by cunning, must depend on the following methods:—

1. The action of cavalry.
2. The capture of prisoners.
3. Intelligence scouts.
4. Spies.
5. Censorship of letters.

It is unnecessary to deal with the first two, save only to mention that the examination of prisoners should, when possible, be conducted by expert intelligence officers.

The remaining methods, however, form the different branches of each local intelligence department, and will each be dealt with.

Intelligence scouts may be:—

1. An organised fighting body.
2. Single men, or men in pairs.

THE ORGANISED BODY OF SCOUTS.

The organised body trusts to force, and its employment will depend on the nature of the war. Such a body consists of men with a thorough knowledge of the country, fine horsemen, well mounted—or, it may be, bicyclists—well armed, specially selected for individual qualities of initiative, mental capacity, boldness, and high physical qualities. With such men the art of leadership is difficult, and the selection of a leader would best be left to themselves. The strength of such a body, of necessity, varies according to the nature of a war. In organised warfare against modern armies screened by cavalry, the employment of bodies of intelligence scouts which would necessarily be of considerable strength would trench on the duties of cavalry, and as such would be beyond the province of the intelligence department. For special services, such as the capture or transmission of despatches, or a raid in a certain direction, they would, however, be invaluable; and intelligence officers of divisions would do wisely to collect such a body. Every intelligence officer must, in any event, be in a position to furnish the necessary guides, interpreters, and despatch riders for the unit of which he is a staff officer.

In guerilla warfare, on the contrary, which can only have place in a country in which the inhabitants are inimical, where every man, woman, and child is an enemy's spy; where the enemy's forces, scattered in small parties watching every garrison, hold the power of rapid concentration; where the invader's troops are tied to the railway lines and towns; where the secret movement of troops is almost impossible, some such body is an absolute necessity to the intelligence officer, for by that means he may hope to strike suddenly and rapidly with a view to the capture of prisoners—his best method of obtaining intelligence. In such circumstances, indeed, a large intelligence military organisation is a most effectual step towards the suppression of guerilla warfare.

Bodies of such scouts, 30 to 50 in number, according to the strength of the enemy's patrols, well armed, with two horses a man, placed 20 to 30 miles apart along the lines of communication, have the power of rapid and secret concentration. Working at night, in a country well known to them, they strike right across the enemy's scattered parties from one point of safety to another, bringing in two or more prisoners for examination.

A few such raids will quickly force the enemy to collect in larger numbers, and thereby lose the advantage of a constant watch on the garrisons, and render himself more vulnerable to the attack of the regular troops. But such operations depend for success on secrecy and rapidity, combined with the circulation of false information; and it is essential that these bodies of scouts have but one commanding officer, the intelligence officer of the district, and that that officer be granted entire freedom of action by the general of the district.

Success in such operations depends to a great extent on the individuality of the intelligence officer, and the manner in which he can impress his personality on his scouts. He should have a secret cipher known to no one but himself and his subordinates in the department; and he should remember that on the manner in which he directs these bodies of scouts, in fact, on his knowledge, on a small scale, of strategy and of the art of war, that the lives of these men depend. It is most noticeable, in the wielding of such bodies of scouts, how the

smallest infringement of the principles of war will bring instant punishment.

With such an organisation the difficulty of furnishing trustworthy guides to a column quickly disappears.¹

SINGLE SCOUTS.

Single scouts, or scouts in pairs, men with an eye to country, beautifully mounted, who seek to obtain intelligence by means of rapidity, secrecy, and cunning, rather than by force, who penetrate or ride round the adversary's cavalry screen with a view to gaining information of his movement in rear, have been employed in all wars. It is unnecessary to enumerate the qualifications such a man must possess, for are they not patent to all? Bravery of the highest order is the first necessity, but it is yet useless without prudence, resolution, the power of rapid decision, and a hundred others.

Of 500 applicants, an intelligence officer will be fortunate if he obtain one fully qualified for, and who can be trusted to carry out such duties. It is the work of all others that appeals to the man of adventurous spirit, for it is above-board, gallant, dashing, requiring ready wit, ready eye, and ready hand.

SPIES.

Spies cannot be too largely employed.

In organised warfare they should permeate every part of the theatre of war, every branch of the enemy's forces, his combatant troops, his supply trains, his office clerks, his telegraph, railway, and, above all, his intelligence departments; they should be in his base of operations, in his principal towns, in his capital; they should exist as members of his Legislature, Church, and Press.

The establishment of an efficient spying organisation is one of the chief branches of preparation for war; and every pound rightly expended on this branch, in peace-time, by a nation, may well, in war, save that nation, it may be, many hundred pounds.

The reports of cavalry or of intelligence scouts, the statements of prisoners, will be of little avail towards obtaining good intelligence save in conjunction with a good spying system; for from the former but little can be expected but the positions and approximate numbers of the enemy's troops, and the capture of a despatch here and there; while from the latter may be gained knowledge of the intention of the opposing general, of the moral of his army, and of his vulnerable points.

But the capable leader is not content with mere good information of the enemy's actions in the theatre of war; such intelligence must of necessity arrive after the operation has been accomplished; and can only be of value as a basis from which to infer his future actions. The good leader, like the chess player, will do his utmost to inveigle his enemy into the committal of a false move, to open up a vulnerable point to attack. "Mistify and mislead," the late Colonel Henderson told us again and again, and, like all the teachings of that master of strategy and the art of war, the truth of this maxim was proved to all who cared to learn, in the Boer war. "Mistify and mislead"; this advice

¹The dangers which result from an untrustworthy guide have been graphically described by the author of "On the Heels of De Wet."

epitomises the principal features in the art of leadership: for the leader who knows how to mistify his adversary, knows his own mind, keeps a definite object in view, is resolved to gain that object, must know the disposition and movements of his enemy, and must be in possession of a well-organised and efficient intelligence department.

It is solely by means of spies that misleading information can be efficiently circulated.

A general will not receive as authentic the general talk of his troops and the country people; he acts on probabilities combined with small items of secret information which tend to support those probabilities.

It is by the cunning circulation of such small items of secret information, through certain channels which lead direct to the enemy's leader, that the capable general will convey his false information; but man is suspicious; and on no account may such intelligence be traced to its true source. The source of information must not, however, be wrapped in mystery; it must appear clear to the recipient, the general whom it is desired to mislead.

A bogus telegram, cunningly burnt, leaving but few words visible on which the opposing general may exercise his powers of discrimination, left lying in the fire-place, and picked up, so it is reported, by a trusted agent, conveyed secretly from hand to hand, and ultimately, perhaps, despatched post haste by some excitable subordinate to that chief whom it is intended to mislead. Such is one amongst the hundred different devices which an expert intelligence officer can devise.

It is clear that, in the conveyance of false information, the enemy's intelligence department must be utilised to the full. But how should this be?

A spying system in the theatre of war may be divided into two branches:—

1. Those men working in the enemy's ranks in the field.
2. Those working in towns amongst the civil population.

The former class, men actually members of the enemy's army, in receipt of his pay, must be placed in his ranks by the central intelligence organisation, in peace, prior to the war; for once war has broken out, no nation is sufficiently supine to take recruits with doubtful antecedents; except, indeed, the British nation, which, the numbers in its armies being hopelessly inadequate to its requirements, is forced, in war, to obtain recruits from every source available.

Men working in the towns will usually pose as countrymen and non-combatants; and, indeed it is necessary that they should have a knowledge of the country and of the language of the opposing force. But it is useless to attempt to enumerate the thousand and one disguises which may be adopted; it is a matter best left to the individual concerned, for his life will depend on the effectiveness of his disguise, and one may rest assured that he will use his best efforts in his own behalf. A man will usually work in the capacity he is best fitted to fill, the bootmaker to mend boots, the farmer to sell vegetables, the schoolmaster as a schoolmaster, the clergyman as a clergyman.

In organised warfare spies must be placed in the line of advance or retreat of the enemy, and the method by which they get their information and pass it through to its destination must be left to them.

In no case should the hands of a spy be tied down to a method which circumstances may render impossible. Avarice or fear, or for

choice both combined, may be trusted in most cases to induce a man to do his utmost, than which no man can do more.

The art of leadership, the power to trust subordinates to do their own work, in this case as in all others, comes into play. If possible a network of spies in communication the one with the other should be established in the country over which the enemy may be expected to operate; but such an organisation requires much time and care, for one untrustworthy man will betray his neighbours to right and left, who, hard-pressed with threats of death, will quickly expose their neighbours, with the result that the system will break down.

Such a system is, in fact, possible only to careful preparation for war directed by strategical experts, who have fully recognised the probability of such a war; or in a long-drawn-out war of annexation. Such a system was apparently established in Cape Colony by the Boers prior to the war of 1899; while it was also established in parts of South Africa by the British towards the end of the war. Where preparation for war by a nation is non-existent, it remains for the chief intelligence officer with the army to do his best; but any system he may establish will, like all improvisations, be imperfect, and will cost much blood and money. In a war of annexation, where the country districts are held by guerillas, spies may be sent out from garrison towns under every conceivable pretext; permitted to escape from a train, shot at but carefully missed; granted a pass to visit relations in the country, to search for a wounded brother who is reported to have been hurt; but they should always be primed with information, partly true, partly false, secretly carrying letters (which have been inspired by the intelligence department), a little tobacco, a pair of socks, etc., to enable them to curry favour with the enemy.

A secret service system in a town is an absolute necessity if good spies for outside work would be obtained; for great discrimination is required in the selection of these men, and a knowledge of their antecedents is essential.

But it is essential for other and more important purposes. It has been said that the intelligence department of the adversary should be utilised to the full. The adversary, if he possess an efficiently organised intelligence, will have his spies in every town of the theatre of war, whether they be garrisoned or not by his opponent.

Even as two opposing nations, in the struggle for existence, must meet in conflict, and sooner or later strike for supremacy; and as two opposing armies must similarly, sooner or later, do battle; so must two adverse intelligence departments in the same theatre of war struggle to gain the mastery.

Hence it is that every possible effort must be made to expose the subterraneous workings of the enemy's spies; and either to wholly suppress his organisation, which can only be done under stern martial law, or, by the removal of a link here and there, and the insertion of one's own agents, to render it useless to the adversary, and of value as a machine for the transmission of false information. It is only by an efficient secret service, combined with the strictest of martial law, that the threads of the enemy's organisation can be placed in the hands of the intelligence officer; not one single thread, which is a line of communication to the adversary's general, must be permitted to remain intact and untampered with.

It is in towns, the centres of the organisation, that operations against the adverse intelligence department can best be conducted; for it is obvious that if these centres are disorganised the whole will be rendered useless.

It may be taken as a fact that every piece of faulty intelligence that is acted on by an army, or every item of true intelligence that is carried to the enemy exacts, whether it be in organised or guerilla warfare, its payment in blood; and, it may be, that if of value, it will lead to defeat. The value of good intelligence cannot be over-rated, and it is of the first importance to render the enemy's spying organisation innocuous. These are facts which are exceedingly difficult of recognition to those who have not studied the art of war, or to those who constitutionally are unable to believe in the existence of anything which is not apparent, immediately below the nose; it is on this point of the suppression of the enemy's spying organisation that the intelligence department must rely, or clash with the administration in the theatre of war.¹

It should be unnecessary to point out that the principles on which the British constitution is founded, the liberty of the subject, the freedom of the press, are incompatible with the successful conduct of war; for it must be clear to all that the difficulties to be experienced in the suppression of an inimical spying organisation are insuperable unless the power of arrest and prolonged detention on mere suspicion be granted.

Spies are careful men, and will not willingly place themselves in the hands of their enemy. Working in secret as they do, they must be fought with their own weapons and brought to book by spies. It takes a thief to catch a thief; it takes a spy to catch a spy. Clear proof will seldom be forthcoming against the enemy's spies; the evidence will always be that of men who are spies themselves; private spite or baser motives may actuate the witness; the suspect may be unjustly imprisoned; but no matter; in war, justice must give way to military exigencies; for the man may be a spy, and if left at large may work untold mischief. A maxim of administration in war should be: arrest first and seek proof later.

The exposure of the enemy's spying system is in reality police work; and where the police force of a country is practised in peace-

¹ In 1900, on the evacuation of the principal towns in the Free State by the Boers, they left behind a most efficient system of espionage. There was a central organisation in each town, which endeavoured to gain control of the various departments of the civil administration, such as post office, customs, etc. By this means it scattered its emissaries in official positions, under the aegis of the civil administration, throughout the country districts. This organisation had become exceedingly powerful towards the end of 1900, and was, in fact, the real ruler of the country. Any attempt at secrecy on the part of the British was impossible; and, owing to the cry for conciliation, martial law was rendered practically inoperative. Boer spies, with absolute freedom of action, infested every corner of the country in the occupation of the British. It is not difficult to trace the rebellion in the south of the Free State, and the consequent invasion of Cape Colony, to the excellence of this Boer intelligence department. In close touch, as it was, with that in Cape Colony, it was fortunate that a great and sudden rebellion in the latter country did not also result.

time in such work, it would be unnecessary for the intelligence department to concern itself in the matter, provided the police were themselves above suspicion, and worked loyally and faithfully with the intelligence department.

But in English-speaking countries which have received a constitution, the spy, or the man who secretly, or even openly, incites to rebellion, is not apparently considered a criminal; whereas in those countries, whose very existence cries out for the suppression, at all costs, of inimical spies, he is rightly regarded in the light of the most dangerous of all criminals, for he would secretly murder the nation.

It is, fortunately for the country, becoming more apparent day by day to the British people that the strategic principles of its existence as a nation differ but little from those which govern the existence of Continental nations. It, however, remains, in the meantime, for British soldiers and sailors to clearly recognise the difficulties, arising from the British constitution, under which they must labour in the prosecution of war; and, by constant hard thought and study in peacetime, to prepare themselves to undertake the grave responsibilities and surmount the difficulties, far greater than the soldiers and sailors of Continental nations must face, which will of necessity be thrown upon their shoulders in war.

They, at the least, should recognise that in the event of war with Continental Powers, a crisis in the struggle for existence, which cannot now, it would seem, be long delayed, their country will be infested with the enemy's spies, that information of every movement, whether of troops or ships of war in the harbour, will be reported, whether by telegraph or post through neutral countries, whether by pigeon post direct, whether by neutral vessels; that plans of their fortresses, arsenals, and dockyards will be in the hands of the enemy; that secrecy, on which success to such a vast extent depends, will be impossible; that men inciting to sedition or even rebellion will everywhere abound; and that in the absence of scientific leadership of the nation, or efficient preparation for war, it will depend on their knowledge, determination, and devotion to duty to save their country, if necessary against her will, from the results of her ignorance.

In a war of annexation, where the inhabitants are to a man, woman, or even child, potential spies, stern martial law is the first necessity. The conciliation of the people, though it is obviously desirable, does not consist in granting the enemy's spies perfect freedom of action; and neither does it consist in permitting that enemy to pack every branch of the civil administration with his spies.

Such a course merely induces contempt. Efforts at conciliation before the enemy is defeated are fruitless; beat him first; and later, with hand on his throat, conciliate. Any other form of conciliation is rightly regarded as weakness, for its real name is fear. It was these efforts at conciliation in the Orange Free State, before the Boers were defeated, combined with an extraordinary laxity in the administration of martial law, and the consequent perfection of the Boer spying system, that was principally responsible for the capture of Dewetsdorp by the Boers in 1900, the rising in the south of the Colony, the second invasion of Cape Colony, and the continuation of the war.

Spies. The word is objectionable; it presupposes all that is dirty and low in human nature. But there are spies and spies; there is the man who, actuated by the sincere love of country, deliberately undertakes the most noxious of all trades, without thought of reward or self-

advantage; there is he who, in a small way, will do dirty work for dirty pay; and there is the one who, insulted if he be termed a spy, will yet act the part to perfection under the guise of patriotism, but in reality as a seeker after place and power.

Of this latter class are those political spies who, members of the legislature of a country at war, secretly do their utmost to assist the adversary, in order to hamper the Government, and thereby gain wealth and position; or fearing that the enemy will ultimately triumph, desirous of retaining their position at all hazards.

There is not much to choose between this latter class and the low class spy; both are actuated by dirty motives; both merit death if caught; but the political spy runs but little risk, more is the pity; whereas the low class spy constantly risks death. Of the two types, the low class is decidedly the higher in the scale of humanity.

Let us deal with the first-named, the man actuated by patriotism. He is a gentleman, a man of honour and of education, one filled with a high sense of patriotism, who, recognising that in war every man should do his utmost to further the interests of his country and confront her enemies, unable, perhaps, for various reasons to take arms in his hand, hesitates not to employ his brain in tracing and outwitting those hated secret enemies who, working underground, are employing every art to ruin his country. The work is not such as a man would choose; the more honour, therefore, to him who will, in the popular estimation, dirty his hands for his country's good, for he is usually a man who would also give his life for it.

He is fanatical in his love of country, with fanaticism writ large on his face, and is inclined to exaggerate dangers. From this class human nature travels down in insignificant gradation through the ranks of those, more numerous, who will, partly from patriotism, act as secret agents without hope of reward, but only provided they are assured of safety in person and effects; through those who consider it the wiser and safer course to work for their country, and are not above accepting some slight reward; through the large class that will work in any way for the best paymaster; to the opposite extreme, to the few who, morally twisted, criminals who have mistaken their vocation, love underhand work for its own sake. It is from these two extremes that the intelligence officer will obtain his best secret agents; for they are trustworthy, the one from high motives, the other from the lowest, perhaps, but at the least not sordid.

It is he who is actuated by sordid motives, by avarice, by the desire for place and position, who is untrustworthy, and will sell himself to the highest bidder.

The avaricious is also a fearful man; and these men, when employed as spies, must be kept faithful not only by high pay, but by the inculcation of fear. It is under martial law alone that the intelligence officer holds that autocratic power which will enable him to strike terror into the hearts of his spies.

Women spies. They work from motives other than those which actuate the mere man. There are certainly those who are patriotic, avaricious, who desire place and position, but, as a general rule, the woman who will play the spy will do so from hatred, from love, from a desire to hold power, from a desire to display an appearance of power to admiring feminine confidantes, but, above all, from a certain inborn love of intrigue.

The patriotic woman, or those desirous of place, power, or position, are actuated by the same motives as are men, only more so. Their patriotism, once roused, knows no bounds, and they will fall to the lowest depths in ill-directed pursuit of information. The avaricious woman is, somewhat paradoxically, usually content with small gains. Those who desire to display their power to friends, the largest class, apparently, of all woman nature, are, as must be obvious, worthless.¹

Love and hatred have been mentioned. The woman moved by hatred against an individual will in some cases, if of an excitable nature, expand her hatred to embrace the whole nation of that individual. A woman moved by love, whether it be of husband, father, or brother, will go to all lengths to help the person she loves; and will, if necessary, suppress her patriotism and take service with the enemy's intelligence department. Women actuated by patriotism or hatred, hot on the quest, rush to extremes, are inclined to exaggeration, but are valuable if they can be restrained. Those actuated by self-interest, the desire for power or avarice, like men, are of value or are trustworthy only so long as they gain a distinct advantage thereby.

The love of intrigue would appear to exist in a latent form in almost all women; it is war which calls it forth into being. Women actuated solely by the love of intrigue are seldom entirely trustworthy; if they can be rendered so, however, they become valuable.

It will be asked: "Why is it necessary to employ women in so horrid a trade?" The answer is that it is unavoidable.

In war, women from various motives will, in spite of all efforts to prevent them, intrigue for one side or the other; if unchecked this intrigue will quickly attain gigantic proportions; if unwatched it will become dangerous. Set a thief to catch a thief; a spy to catch a spy; a woman to catch a woman.

But there is another reason: a woman will often succeed where a man will fail. Hence it is that the intelligence officer will find it necessary to employ women spies. But let him be careful, let him be cunning, for there is more danger in the employment of one woman spy than in that of a dozen men. As women are paradoxical, so must he be paradoxical; let him be frightened of them, and yet not afraid; let him inspire fear, and yet not frighten; he must appear to them contemptible, but yet they must not dare to hold him in contempt.

He must leave no stone unturned to ascertain their true motives; and he must keep them in constant doubt as to the extent of his knowledge. He must be an unsolved riddle; so only will he keep them trustworthy. More than with men, it is his personality, or his reported personality, which will ensure trustworthiness; for with all their patriotism, avarice, or this, that, or the other expressed motive, it is not the cause but the individual for whom women will work indefatigably.

But above all must the intelligence officer guard himself; and if he distrust himself, let him obtain the services of an old disillusioned world-worn man, one for choice who has buried at least one wife, to act as intermediary.

In his selection and treatment of spies, male or female, the intelligence officer must be guided by his knowledge of human nature, and by

¹ These latter may, however, be utilised:—1. To attract public attention away from the real secret agents. 2. To establish popular fear of the omnipotence and omniscience of the Intelligence Department.

his power of deciphering the thoughts and character from the face. This art, like all knowledge, is to be gained by the combination of hard thought and experience. It is constant study through year upon year, the examination and comparison of men's motives, faces, and actions; the consideration of that most complex of all problems, the human character; the eternal vivisection, so to speak, of the human mind, that can alone teach this knowledge, which is the first requisite in the art of leadership as in intelligence.

The chief mainsprings of human action are, when all is said and done, self-interest and fear; or, if there be others more powerful, they seldom, at the least, force themselves into undue prominence in war. Patriotism is partly a natural growth, partly exotic; it is apt to die out through long years of peace, and can really only flourish in the forcing-house of national danger or education.

Self-interest and fear are the two principal sentiments with which the intelligence officer must reckon, whether it be in the examination of prisoners and deserters, or in the selection of spies; and he will usually find that patriotism and the nobler sentiments will give way to these two. Fear is, above all, the most powerful lever with which to move man, and there are few possessed of the hardihood to withstand it. There is the prisoner, or, as sometimes even happens, so intricate is human sophistry, the deserter who will prate of his duty to his country and refuse to give information, but who, when tested with the touchstone of fear, will prove false metal.

But fear must be applied with terrifying accessories: it is useless to threaten a man with death unless he be given good reason to suppose that the threat will be carried out; the appearance of the firing party will, except perhaps in one instance in a million, clinch the argument. And so with spies; it is fear which will render a man or woman trustworthy, and usually fear alone. That side which can the better instil fear will obtain the more trustworthy spies, and consequently the better information than the other. Even as an example is from time to time necessary to secure stern discipline amongst troops, so is one necessary to ensure discipline amongst the spies of the intelligence department. And in this point again the intelligence department depends for success on the stern administration of martial law, and he who cries out against this or that petty restriction, against some punishment inflicted which appears to him unjust or for which he cannot trace the reason, is ignorant, and probably unaware of the fact that he is giving direct assistance to the enemy.

It cannot be too often reiterated that principles of philanthropy, pity, or it may even be of justice, are out of place in war, and must give way to military exigencies, to severity, or, it may be, cruelty, to stern justice without mercy, or, it is even possible, to judicial crimes. Philanthropists who are not in the pay of the enemy would do well in war to reserve their pity for their own soldiers, who day by day give their lives uncomplainingly for their country. A mild administration of martial law is the worst enemy with which the intelligence officer has to deal, for it not only grants the enemy's spies complete liberty of action, but, in the absence of fear, makes it impossible for him to ensure the trustworthiness of his own.

It is the case that in the theatre of war, the administration of a district should be directed by the intelligence officer of that district. No regulation should be brought into force, no person appointed to official positions, no passes granted without previous reference to him.

Where a civil administration exists it should, in war, be done away with; but, if this is impossible or undesirable, every vestige of power should be removed from its hands, save only in matters of trifling import which can have no bearing on success or failure in war. But the points with which it is permitted to deal should be decided, not by this civil administration, but by the military authorities; for it is the case that men other than soldiers, and indeed sometimes even soldiers themselves, who should know better, habitually underrate the difficulties with which the intelligence department has to deal, as well as the importance, the vital importance, of good intelligence to the military chiefs. They can, moreover, seldom be brought to grasp the fact that enemy's spies exist, even when they hob-nob with them daily.

The administration throughout the theatre of war should be a modified reign of terror, for it is by that means alone that the people of the country, if inimical, can be forced to bring in information.

It is the bounden duty of the intelligence officer to, vulgarly speaking, "establish a funk."

It is he and no other, the expert, who is responsible that good intelligence be obtained; if he succeed he may, it is possible, be rewarded; if he fail, he will assuredly be punished. It is impossible to obtain good intelligence without terrorism, without it money must be lavished, and, even so, it is of no avail. Without the power to inspire fear the intelligence officer is helpless; but he must devise means, resort to trickery, before he allow himself beaten. Failing a good and efficient secret service, let him prate of its efficiency; popular belief in the existence of secret service is next best to the reality.

Let him exaggerate his powers; let him talk; it will be some months before he is found out, before the lion's skin is removed and the ass displayed; and in the meantime, it may be, that he will succeed in his efforts to teach the ignorant, and to obtain the power to do his duty. Before leaving the subject of spies, it may be as well to mention that no man makes a worse or more inefficient spy than the British officer. In any part of the world he is still the British soldier, and this is a fact which is patent to all foreigners.

CENSORSHIP OF LETTERS AND TELEGRAMS.

In war, the telegraph and post office are of exceeding danger, save with the most rigorous supervision; for they afford rapid and certain channels of communication to the enemy. The censorship of letters and telegrams is all-important; and it is not too much to say that its absence in the part of the theatre of war under the control of an army renders the efficient conduct of war impossible. On the occupation of a town, it is the first duty of the intelligence officer of the force to seize all documents in the telegraph and post offices and submit them to the translation and examination of his subordinates.

The strictest and most efficient censorship should be established in every town in the possession of an army, not only as a means of obtaining intelligence, but with a view to closing a channel of communication between the enemy's spies. But this is insufficient; censorship should also be established throughout a country which is engaged in war even though that country be far removed from the theatre of actual operations. It is a well-known case that in 1870 the Germans obtained much information which had leaked out from France and

found its way into England. It is also well known that in the late Boer war the Boers were to a great extent kept in the field by the seditious articles and reports of disloyal speeches in English newspapers; which, in the absence of martial law and censorship in Cape ports found their way into the theatre of war. The absence of censorship in Cape Colony and in the Orange Free State on the occupation of that country enabled the Boers in the field through their spies to utilise the post office as a sure and rapid means of communication with their well-wishers in Europe and in Cape Colony with a view to the organisation of rebellion in the latter country.

This absence of censorship cannot be too severely condemned, for the desire to conciliate an enemy cannot be held as sufficient reason for the disregard or ignorance of one of the elementary necessities of war.

The staff of any local censor cannot be laid down; for it, of necessity, varies according to the size of the particular post office; but it should be organised on the basis that every letter must be read and examined. In a theatre of war of the size of that in South Africa, such an organisation would entail the employment of a number of officers who could ill be spared from other duties. The principle should therefore be recognised that in the theatre of war, the post office exists, not for the benefit of the people, but solely for the benefit of the army. But the army has its own post office.

The civil post office is therefore of value to the army only in so far as it affords means of obtaining information. If officers in sufficient numbers are not forthcoming for the institution of an efficient censorship the post office should be closed; for it is absolutely necessary that the enemy should not, at the least, be permitted to make use of it. Such a course would, it is clear, entail a great outcry on the part of the public; but this is or should be a matter of no importance in war when the lives of soldiers and the existence of nations are at stake; and it should be remembered that popular outcry is easily aroused by the expenditure of a little money, and is more often the result of the machinations of one or other of the opposing intelligence departments than of the true feelings of the people. Thus, in the Boer war, the agitation in Great Britain with reference to the concentration camps in South Africa, was without doubt engineered in the first instance by the Boer intelligence department, which endeavoured to strike at the British through those English people whose hearts were stronger than their heads.

The censorship of letters is in itself a complicated subject which requires much thought, on the part of a would-be censor. The mere establishment of an efficient censorship is not, especially in a war of annexation, sufficient; for the enemy's spies and adherents will employ every artifice and expend money freely in order to evade it. The censorship to be really efficient should be secret; but this would entail the substitution of military employes for civil, an operation possible only to a nation in arms which is prepared at all points. As in other matters, the intelligence officer must meet artifice with artifice; he must employ trickery and low cunning to gain his objects, that is, to induce the enemy's spies and adherents to utilise the post office in order that their letters may be read.

There are many such methods but they one and all depend for success on an efficient secret service.

The British in South Africa must needs tell all concerned that their letters were examined by plastering each opened letter with a placard, "Opened under martial law." It was a kindly thought on the part of the British, and its immediate result was that the post office became useless for intelligence purposes and that letters were sent to their destination by hand. The difficulty was somewhat obviated by the circulation of the untrue report that the British officials were so overworked, that they had no time in which to read the letters, but were content to frighten the people by means of the placard. The exact reason for the use of this placard is not clear; it was probably, like most similar mistakes, adopted for political reasons, and because the British people, being a free people, considered it unkind of the military authorities to read the letters of the enemy's spies. But it is more probable that the idea originated with those spies, who somewhat naturally desired to warn their friends throughout the world that their letters were read. By whatever reason it was induced, certain it is, that it added considerably to the work of British officers, and was but another useless item of expenditure.

Thus it will be seen that the main duties of the intelligence department in war are:—

1. To obtain the best possible intelligence of the enemy.
2. To circulate false information to the enemy.

The means by which these duties are carried out are:—

1. Scouts.
2. Spies.
3. Censorship of letters.

As fear and self-interest are the two chief human motives on which the intelligence officer must depend, so must he be in a position to inspire fear and to expend money.

But there are other duties which devolve upon this department:—

1. To furnish the necessary guides and interpreters.
2. To transmit despatches by hand when necessary.
3. The supply of maps.

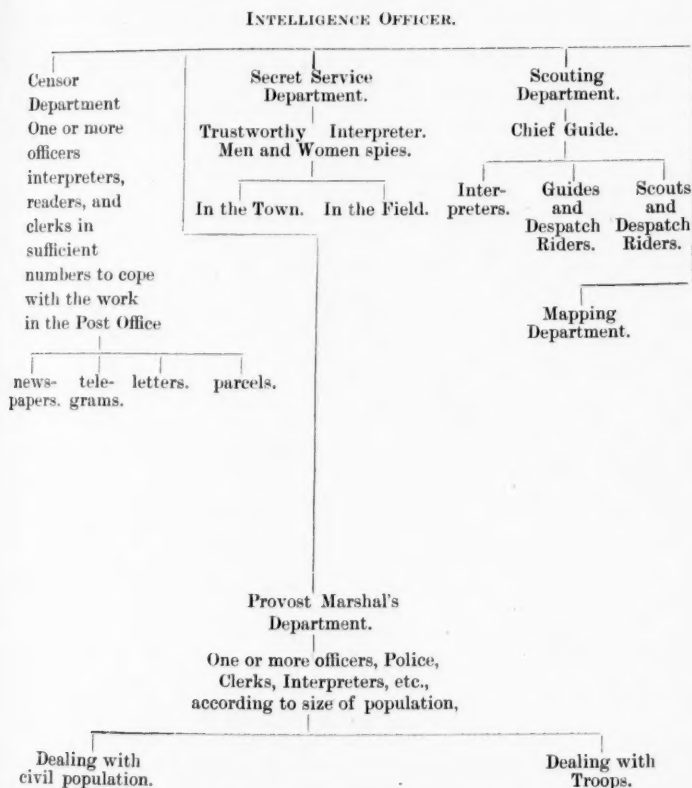
Despatch riders must be above suspicion, and so equally must guides when possible; if it be necessary to obtain the services of a guide who cannot be trusted, he must be rendered trustworthy by fear. The prospect of early and certain death as a punishment for treachery will ensure faithfulness, except, it may be, in one case in a million. In such a case the punishment must be inflicted on the instant of the commission of the crime; there should be no appeal, and it should be carried out by the escort to the treacherous guide. It is certainly advisable, however, when Great Britain conducts war, that the officer of the escort should previously have obtained the authority of his general to punish the guide's treachery with instant death; as otherwise, after the war, he may well be tried for murder, to soothe the susceptibilities of powerful philanthropists.

Guides, interpreters, scouts, and despatch riders, should be almost synonymous terms; and a body of "intelligence scouts" should be organised so as to include a sufficiency of all these. As an example, let us mention Rimington's Guides in the Boer war. These men, thoroughly trustworthy, were invaluable to intelligence officers who were so fortunate as to obtain the services of one or two of them.

We can now put down the organisation of what may be termed the "intelligence unit"; though the strength must vary according to

the nature of the war and the amount of previous preparation which the country has thought fit to indulge in.

COMPOSITION OF AN INTELLIGENCE UNIT.



This organisation would apparently be suitable for the intelligence unit in the field, with the headquarters of divisions and army corps, and for that in towns on the line of communication, though it is of course clear that the strength of the different branches of the unit would not be similar. Thus in the field, the censor and secret service branches would be cut down, while the scouting and provost-marshal's branches must be strong. In the towns, the centre of districts, on the other hand, the censor, secret service, and provost-marshal's departments, would be of the first importance.

Again the conditions differ in a war of annexation.

In this case, every town occupied is intended to be occupied for ever; the intelligence organisation is or should be a permanency until the country has been finally pacified. While the enemy's troops are

still in force in the field, the military operations are carried out by mobile columns, and the intelligence must give its first attention to secret service, censor, and provost-marshal's work. As the enemy's forces lose, by degrees, in organisation, and develop into guerillas and bandits, so does the scouting department increase in importance and strength; and, being given a larger organisation, undertakes sudden raids and surprises with a view to catching the enemy's leaders, and striking terror into the guerillas.

As the war terminates, the scouting department by degrees gives way to the police force; the provost-marshal's department to the civil administration; while the secret service and censor's department should be strengthened to enable them to cope with the increase of work, for it is by the work of these two latter that the future peace and security of the country may be best assured.

But little mention has been made of the provost-marshal's department, and such as has been said will hardly commend itself to those officers who acted in this capacity in South Africa. It is not intended to deal with it in detail but only in so far as it concerns the Intelligence Department. As has been said, the latter department depends almost entirely for success on fear, that is on the manner in which the administration of a district, the provost-marshal's duty, is carried out.

With a weak, ignorant, dishonest, or disloyal, administration good intelligence becomes impossible, and hence it is that the intelligence officer who would establish an efficient intelligence machine must give his first attention to the administration of the district. No matter whether that administration be military or civil, it must be above suspicion, conducted with stern and so far as is possible impartial justice, but above all with a thorough knowledge of the exigencies of the conduct of war. For example: if the enemy's spying system be well organised and powerful, it must be broken up; examples, justice or no justice, must be made; and a reign of terror introduced.

The provost-marshal or administrator is, or should be, in war, the instrument of which the intelligence is the directing brain. But the provost-marshal has duties to perform which is in no wise connected with intelligence work; he must punish military offenders; he must suppress ordinary crime amongst the civil population; he must deal with questions of murder, of theft, and the thousand and one civil offences with which the intelligence department has no concern. Why, therefore, should he be placed under the orders of the intelligence officer? This is a question to which it is difficult to reply. The provost-marshal should act without hesitation or question on the written request of the intelligence officer and such request should be kept secret from all but the general, while the provost-marshal should appear to all to have acted on his own initiative, unless the intelligence department desire to appear in the matter.

The provost-marshal should have no secret service of his own, lest his system clash with that of the intelligence department, with the inevitable result that the spies of both are exposed to the enemy. It is therefore unavoidably necessary that the provost-marshal should depend on the secret service of the intelligence department to trace criminals on the capture of whom the reputation of his department must rest. This is, however, a matter of but little difficulty, for the ordinary spy is not over-particular as to the exact type of his quarry, whether

that quarry be a comparatively harmless thief or mere murderer, or a person of far greater significance in war, an enemy's spy. The intelligence officer must always be sufficiently hard-worked to feel but little desire to undertake the responsibilities of other men; but when he finds it necessary to interfere in the administration of the civil population, the wise general will at once, if the power lies with him, place that administration under his orders.

It may perhaps have become apparent from what has been written that the work of an intelligence officer is no easy task. We have so far dealt with the machine of which he is the head and the manner in which he must wield it. And now for his personal duties and responsibilities.

The late Colonel Henderson considered that the intelligence officer should be the expert strategist to whom the general should turn for advice. Even if it appeared clear that he was wrong, one would yet hesitate to, and with much inward searching alone, discard his views.

But that he was right, there can be no doubt. The intelligence officer gains numerous little side lights of knowledge of the situation which the general cannot hope to obtain; slight trifles, apparently too insignificant to be set down on paper at the time, but which find a niche in the memory; and, receiving corroboration from other trifles, ultimately accumulate and from a probability which can no longer be overlooked and which may well give the key to the whole strategical situation. Even as a speck of rain on a window-pane, barely noticeable at the time, receives additions from other specks, and, developing into a drop, at last attracts the attention of the beholder, so this accumulation of trifles of information forms a drop of intelligence from which the beholder, the intelligence officer, may draw inferences. But even as the drop of rain cannot again be separated into the original specks, so the drop of intelligence can no longer be broken up by the intelligence officer into the numerous minute particles which were originally stored up in his memory. Each has lost its identity and he can but lay the whole before the general, who, ignorant of the different steps, will, it may be, disbelieve the whole. But more than this it is the case that the intelligence officer gives his whole time and undivided attention to the study of the situation: for whether he employs scouts or spies he must direct them with a view to the elucidation of certain mysteries, an insight into which will alone clear up the whole situation.

The general's attention on the other hand must be constantly given to questions of supply, transport, and the hundred matters with which he must perforce occupy his time. There is yet another point: the general bears the responsibility, and for that reason alone cannot hope, unless he be of a stuff finer than may usually be found in the composition of man, to study the situation with that absence of bias which is so necessary and which an irresponsible subordinate may easily display. It would seem that a wise general should not only call on his intelligence officer for advice, but should, in certain circumstances, hesitate to adopt his own opinion in preference. It follows therefore that the intelligence officer should be an expert in strategy and in the art of war. It is indeed the case; and he will find that, in war, though he had never previously given thought to the study of strategy, he must of necessity, turn his attention to it; for it forms the basis

of all the intelligence operations even of an intelligence officer in an entirely subordinate position.

But Colonel Henderson went further. He always endeavoured to impress upon the students to whom he taught the art of war, that it was the bounden duty of the staff officer to call the attention of his general to mistakes which were about to be committed.

In this again, there can be no doubt that he was right. Such a course, however, calls for considerable moral courage on the part of an intelligence officer, for it is broad questions of strategy and policy that he may be compelled to press on the notice of his general.

An intelligence officer must sacrifice his whole time, and, if necessary, his future prospects, to do his duty. By day and by night his brain must be at work scheming, evolving new plans by which he may hope to outwit the enemy. His, in war, is no easy task; it is a life of constant toil and strain; on his work, more than on the work of others, must depend the lives of soldiers, for false information leads directly to defeat. He, more often than most men, must cheerfully accept a weight of responsibility out of all proportion to his rank; he must deal with big questions; he must do battle with big men or gangs of big men; he must ever be on the watch for snares laid for him by unscrupulous adversaries; he, the expert, must hold to the courage of his convictions on all intelligence matters against all opposition. He holds the lives of his scouts or spies in the hollow of his hand; and his every false move is paid for in blood. Success depends on his individuality; on his power of trusting subordinates to the uttermost; on his power of punishing heavily and rewarding highly; on his courage in defending those subordinates, and of taking the responsibility for their shortcomings or failures.

It depends on his capacity to discriminate generally on the flimsiest of evidence, between evil intention and stupidity or ignorance; it depends on his knowledge of human nature, on his power of extracting the underlying motive from every action performed, or his power to frighten, flatter, or pacify.

It depends on his power to face failure or success with equal equanimity.

His must be the moving spirit which should make itself felt throughout the organisation; his the spirit to rouse enthusiasm and to make the performance of impossibilities possible. But more than all, it depends on his knowledge of war and his study of it; on his grasp of the situation in the theatre of war, and his power to interpret the intentions of the enemy.

It is by years of thought and study alone that a man shall train himself to do his duty as an intelligence officer; for the study of intelligence work involves the study of strategy and of the art of war. The collection of intelligence in the field is a highly complex and technical subject that requires the full time of the expert; the collation of it requires knowledge of strategy. Information of the enemy's movements, strength and doings must be dragged from that enemy by force, by trickery, by every conceivable means, moral or immoral. Interference in the province of the intelligence officer by one who has not made a study of the art is, in all cases, tantamount to dislocating a delicate organisation; it is the bull in the china shop.

The general who would have efficient intelligence must clearly recognise the fact that he is not and cannot be an up-to-date expert in the matter and must delegate the work to his expert subordinate. He must leave that subordinate an entirely free hand, neither interfering himself nor permitting interference on the part of others. He must moreover adopt the suggestions of his subordinate in all matters concerning intelligence almost without question; and he must bring himself to understand that he himself, unless he has made an exhaustive study of the subject in the past, is of necessity a mere child in his knowledge of intelligence work.

We have now dealt with the duties of the local intelligence officer in charge of the department of a district or with a body of troops in the field.

As has been said, every town in the theatre of war in the hands of troops should be given an intelligence officer with his complete intelligence unit, of which the strength and composition vary according to the importance of the place and the number of the civil population. As the army advances and the number of towns on its lines of communication increases, so must these towns be formed into districts, for it is of course apparent that the chief of the intelligence department at the headquarters of the army cannot himself pay attention to each town in a theatre of war of any extent. The organisation of an effective intelligence on the lines of communication is indeed of as great importance as that of supply or transport, and it should be delegated to an expert intelligence officer on the staff of the general in command of these communications. He it is who should divide the theatre into districts in conformity, when possible, with the district organisation adopted by his general.

As the chief of this department is the expert in strategy to whom the commander-in-chief should turn for advice, so is the intelligence officer of the lines of communication the strategist to whom the general of communications should lend ear. As the general must be in the confidence of his chief, so must the intelligence officer be in the closest touch with his expert chief and local subordinates. If the army be forced to evacuate territory it should leave its spying system of intelligence behind.

It will thus be seen that the intelligence department should quickly become a vast and powerful organisation of which the ramifications should extend to every quarter of the theatre of war. As a whole, this organisation will always have certain duties in addition to those which have been mentioned, for it is the best adapted of all departments to carry out these duties which are necessary for the success of the nation in war.

In these days of peace strategy and careful preparation, war does not consist alone in the hammering of armed forces. It is true that this actual hammering, the battle, is decisive of success or failure; but there are many methods by which the prospects of success may be enlarged, those of defeat diminished, the enemy constantly worried, his attention distracted this way and that, his hammering forces hampered. Every little helps. This will best be illustrated by examples.

In the Boer war the Boers hampered the British forces by every means in their power; their spies and organs in the Press stirred up sedition in Cape Colony, in Natal, and even in Great Britain itself; they roused the popular feeling on the Continent,

and endeavoured to arouse it in the United States, against their enemies; they endeavoured to induce foreign nations to intervene; they everywhere started agitations on the subject of British atrocities and even against that most remarkable display of solicitude for an enemy, the "concentration camp." No molehill was too insignificant but that it could with ingenuity be converted into a mountain.

But the British were not behindhand.

The proclamation will be remembered. At first, it is true, it fell somewhat flat, but protracted determination will tell in the end; and in time the proclamation the only literature the Boers could obtain, plastered on every building, on every tree, stuck on rocks, attracting attention throughout the theatre of war like bald heads on the battle-field glittering in the sun, arriving in letters secretly carried out to the Boers by the most devoted of their spies, undoubtedly, ultimately, got on their nerves, until they shrieked with apprehension at the distant boom which told them another "paper shell" was on its way.

All this is or should be intelligence work.

It is the duty of the organisation in the theatre of war to combat the enemy's false statements, to suppress those who circulate them, to fill the popular mind and the Press with its own inventions in order to rouse clamour against the enemy rather than against its own nation.

It similarly becomes the duty of the great central peace organisation to combat the false statements circulated in foreign or neighbouring countries; to still the clamour directed against its own nation and convert it into a world-wide detestation of its unprincipled enemy; to suppress, or if that be impossible, to argue against the enemy's adherents in its own country; and lastly to leave no stone unturned by which it may, in conjunction with its branch in the theatre of war, find means to hamper the enemy's forces and assist its own.

It is clear that with such duties in war, the central intelligence must have a vast organisation, which must be established in peace, not only in the theatre of war, but in every country the actions of which may have a bearing on that war, as well as in its own country.

PEACE INTELLIGENCE.

Having examined into the requirements of intelligence in war we have the principles on which the central intelligence in peace must be built up; for this central intelligence, like the rest of the Army machine or the Navy, exists solely with a view to war.

It must be the object of any nation to obtain intelligence as near perfection as may be, but its efforts in this desired direction are of necessity limited by the question of expenditure. The organisation which would ensure perfect intelligence must, however, be worked out and the scheme thereafter modified, if necessary, to suit the national purse,

The requirements of every nation in the matter of intelligence are:—

1. Information of the actions, armaments, and possible allies of every possible adversary.
2. A skeleton intelligence organisation, capable of expansion to meet the requirements of war, in the country of every possible adversary, its possible allies, in neighbouring countries, and in the territory of those neutrals whose attitude will have an important bearing on a war.

Perfect intelligence, stepping hand in hand with perfect preparation for any war, would therefore, in the case of the British Empire, involve a standing organisation in peace time in each of the following countries:—

1. France and its possible allies: that is, in Russia, Spain, Abyssinia, and the United States; in Algeria, Nigeria and the West Coast of Africa, Siam and all other French colonies.
2. Germany and its possible allies: that is, Austria, Holland, Denmark, Russia, Turkey and consequently Egypt and the Sudan, the United States, together with the German colonies, German South-West Africa, and German East Africa.
3. Russia and its possible allies: that is, France, Germany, Austria, Turkey or the Balkan kingdoms, Abyssinia, Afghanistan, the Indian frontier Hill tribes, together with its Asiatic territories.
4. The United States and its possible allies—but it is unnecessary to enumerate every country of the world; suffice it to say that the British Empire which is faced with the possibility of war in every corner of the globe must, if it would obtain perfect intelligence, establish its organisation of spies in every town and country of the globe.

The Chancellor of the Exchequer might well stand aghast at such a suggestion; for spies will not risk their lives for nothing.

But it is in this as in all else that the art of leadership comes into play.

Is it impossible to recognise beforehand when a war is inevitable? Possibly; but the almost certain probability, which nearly amounts to the inevitable, can, at the least, be clearly foreseen. Did Moltke and Bismarck fail to foresee the extreme probability of war with Austria or France? Did Kruger and Steyn fail to foresee that war with Great Britain was inevitable?

Did British statesmen fail to see, after that war had broken out, that it had been inevitable ever since the day of Majuba?

Is it impossible for one nation to recognise the fact that it forms the objective of war preparation on the part of another nation, that the interests of the countries, diametrically opposed, must inevitably in the course of nature and unless unforeseen contingencies arise, bring the two nations face to face in the struggle for existence? It is at that moment, when two nations confront one another in this struggle for existence, that war really commences; that strategy should commence to play its decisive part; and that every effort of the nation should be directed to win success in the inevitable

conflict for supremacy. This conflict may or may not culminate in actual war; but preparation for that war is the best safeguard against it.

War is not a game; it is a great crisis in the national life, and it is only by earnest forethought, by expert knowledge of the art of war and of strategy in the leader or leaders of a nation, backed by the single-minded devotion to the national interest on the part of the people as a whole, that a nation exhausted, worn out with its effort, may hope to overcome its adversary and struggle to success. It is the scientific forethought of good leadership that will save not only intelligence expenditure but the blood of men. There are strategic problems now before the British Empire, problems on the correct solution of which her very existence now depends, which would not now exist had intelligent and scientific forethought been given to these selfsame problems in the past when they were but petty trifles which might with ease have been brushed aside from the path of the nation.

It is on such strategic problems, the decisive points, so to speak, in the theatre of the national struggle for existence, that the main attention of the peace intelligence department must be concentrated while it maintains a watch on the other points which are of lesser importance. The peace intelligence and the peace strategy of a nation must work hand in hand; it is for the former to give the latter sufficient general information to enable it to detect a growing danger; and, having such a danger pointed out, to concentrate its full efforts in order to obtain the detailed information on which peace strategy must base its plan of operations.

For instance, which is the nation with which the British Empire is at the present moment confronted in its struggle for existence?

The answer to this question would enable the British leaders to work out the strategic situation as follows:—

1. Is this opponent in the national struggle for existence making preparation for war against Great Britain, that is:—
 - a. Is it endeavouring to obtain allies apparently in view of a forthcoming struggle?
 - b. Is it endeavouring to cause dissension between the different portions of the British Empire?
 - c. Is it endeavouring to stir up matter for conflict between Great Britain and other nations?
 - d. What was its attitude in the late war? Did its efforts tend to precipitate, and to prolong it, or the reverse? were its spies in evidence in South Africa during the war? What was the action of its press? Is it a disciplined "nation in arms" with one single head? Is its Press subject in any way to the will of that leader? What is its attitude as regards the Boers at this present time?
 - e. Is it strengthening its fleet; or has it adopted any other measure by which it may hope to struggle on terms of comparative equality for the command of the sea by which it can alone hope to decisively attack Great Britain?
 - f. Is there any reason to suppose that it has established a spying system in Great Britain?

- g. Which are the vulnerable points of the Empire? Is this nation taking any steps which are calculated to threaten these points?
- h. Is it endeavouring to arouse a feeling of hatred throughout the world against Great Britain?

If the answer to these questions is in the affirmative, then it is clear that not only is war in the future a matter of extreme probability, almost indeed, unless unforeseen contingencies arise, of certainty, but that this other nation has clearly recognised the fact and is making the necessary preparations. If this nation is moreover a "nation in arms" it will be directed by trained strategists; its peace strategy and preparation for war will be conducted with a definite object in view and in accordance with a deliberate plan of operations, and it will strike suddenly and unexpectedly when the propitious moment arrives, making an effort to throw the onus of war on Great Britain.

In such a case as the foregoing it must be clear that Great Britain would make strenuous efforts to overtake the war preparation of its probable adversary, even if necessary by the adoption of universal service; and, if it becomes more apparent that war is intended by that adversary, to strike, if possible, first. As a means to this end the main efforts of its peace strategy would naturally be directed to the enfeeblement of its adversary by every possible means; while its intelligence would endeavour to establish, if not already accomplished, a system of espionage in its adversary's country, its colonies, and in that of its probable allies. The attention of the peace intelligence would, in fact, be strengthened at the decisive point, and at those vulnerable points of the British Empire at which the adversary would strike, while the organisation in other parts of the world would be but just sufficient to give due warning of any other growing danger.

It is by this means alone that the leaders of a nation of the size of the British Empire may hope to obtain efficient intelligence at a not too excessive cost.

But this course is possible only to good leadership, expert in strategy, and in the art of war, and backed by a disciplined nation.

It may perhaps have become apparent that the importance of good intelligence in war can hardly be over-estimated, and that such intelligence is impossible save with efficient preparation in peace time.

It is not sufficient to despatch a few officers dressed in plain clothes to the theatre of war immediately before the outbreak of hostilities. There is indeed considerable danger in so doing, for these men are practically acting as spies, and are liable to be shot out of hand if caught. An officer, and especially a British officer, makes the worst spy imaginable; his profession is patent to all; and he is too valuable—there are so few of them—to be needlessly thrown away.

The adoption of any such course is but a makeshift and is in itself proof that preparation for war has been bad. If officers are employed in such a capacity they should be sent into the enemy's territory in times of profound peace with a view to studying the country, the national characteristics, the habits and language, of the people—but this is another subject and pertains to the education of an army rather than to intelligence.

MILITARY BANDS AND MILITARY MUSIC.

A SERIES OF THREE LECTURES.

By Mr. J. MACKENZIE ROGAN, Bandmaster, Coldstream Guards.

LECTURE I.

Monday, 11th May, 1903.

General Lord CHELMSFORD, G.C.B., G.C.V.O., in the Chair.

MY lecture to-day will deal with the formation, regulation, and tuition of military bands. It is not necessary for the purposes of this paper to discuss the history, still less the origin, of martial music. It is sufficient for my purpose to say that the history is somewhat obscure and the origin virtually lost in antiquity. This much can be claimed, however, that the pages of history, sacred and profane, afford abundant testimony of the conjunction of music with war. Races both savage and civilised from the earliest recorded period have gone into battle with music to inspirit and urge them forward to the fray. The "tom tom" of the savage has played its part with the exquisite music discoursed by those who accompanied the Greeks into battle, and the martial music of the ancient Egyptians is scarcely less remarkable than the descriptions frequently given of the harp, the sackbut, and the psaltery in the history of the army of Israel.

In the dark, and even in the middle ages, martial music in this country had sunk to a low level, but in the corresponding period in Scotland the "Pipers" played their part in arousing the enthusiasm of the soldiers of Robert the Bruce and of Wallace. Even the stern Puritans of the Commonwealth were not by any means oblivious to the effect of music on their armies, for though they lacked the assistance of a band they sang psalms and hymns before going into battle, and like others in more recent times evidently conceived that the "God of Battles" was to be propitiated by a devotional rather than a clamorous exercise of music. Some wag has said that it is not certain whether martial music originated in the desire to frighten the foe or the wish to inspirit the friend. But it is safe to say that whatever the origin there is no doubt of the continuing purpose. There is no Army in the world in these days, whether of a civilised or uncivilised Power, which would think of going forth to battle without music, and to this fact we may attribute the high level which martial music has now attained in Europe and on our own shores. Not so many years ago, though music was looked on as a necessity, it was, so to speak, left to look after itself in a haphazard sort of way. There was no system of training for Army musicians, and little for

those who were to direct them. The term "Military Band," it must be understood, is not only applied to bands connected with the Army, but is equally applicable to any band constituted of wood, wind, and brass instruments. Every performer might be a civilian, and the band might never have played with a regiment in its life, but it still could be called a military band; and above all a military band should never be spoken of as a brass band. With regard to brass bands, I may explain that they are better known in the North of England than in the south: there are a few in the South of England, but not many. In the north such bands are important institutions, and contests between them are held occasionally during the summer months. They are often mixed up by name with military bands, and military bands are also confused with brass bands, but the military band is not a brass band.

I now desire to present to you by way of preface a few historical facts respecting the formation, regulation and tuition of military bands, past and present, and I hope I may be excused for selecting the Coldstream Guards' Band. I do so for the reason that the band is *one* of the oldest in the British Army. Its history can be traced back to about the year 1773, it then consisted of only eight performers, and these were *hired by the month*. The instruments used at that time were 2 oboes, 2 clarionets, 2 French horns, and 2 bassoons.

We learn from Parke's Musical Memoirs that the principal duty of the band was to play the "King's" Guard from the parade at the Horse Guards to St. James's Palace, and back again after the Guard had mounted. They were not regularly attested soldiers, and were therefore unavailable for the discharge of any other duty than that for which they were hired. Lord Cathcart, Lieutenant-Colonel commanding the Coldstream Guards, being desirous of taking the band to play at a water excursion to Greenwich, requested the musicians to attend. They, deeming such employment derogatory, peremptorily refused, and there existed no regulation by which they could be compelled to obey. The officers, who entirely supported the band (of 8) were naturally annoyed at this show of independence, and thought it advisable to possess a band more essentially military in character. With this end in view, the Duke of York, the Colonel of the regiment, and who was then in Hanover, was appealed to. He readily acceded to the wishes of the officers, and with the approval of the King sent over a larger band than had formerly been employed, under the leadership of a Mr. Eley, who was given the peculiar title of "Music Major." This, it is believed, was the first serious attempt made to establish a system of military music in our Army. I have heard that the Royal Artillery Band existed at this time, if not a few years before, and that it also consisted of eight performers. I delivered a lecture a short time ago at the Royal Academy of Music on Military Band Music, and this fact was recorded in a letter sent me by a gentleman. I have not seen it on actual record myself, so I can only mention the fact as it was communicated to me. This gentleman stated in his letter that the Royal Artillery Band existed, I think, in 1765. Of course there may have been bands in some of the Line regiments, but I have no records to which I can refer. The instruments used at that period in the band were 4 clarionets, 2 bassoons, 2 oboes, 2 French horns, 1 trumpet, and 1 serpent. This was the band that was sent to England from Hanover by the Duke of York. Thus was the first military band of the Coldstream

Guards constituted. It was occasionally augmented by subsequent enlistments, and the establishment of the band now is 66 performers. The same establishment exists in the Grenadier Guards and the Scots Guards, but in the Irish Guards the establishment is less, being limited to 44 performers. For a time, Germans continued to be enlisted, but they were gradually superseded by native musicians. At a later date, three Africans were added, and these blacks, who carried two tambourines and a set of Turkish bells, continued to be employed for many years, but were dispensed with about the year 1837. It came to be widely believed, however, that no one but a foreigner knew anything of musical matters. At one time the rage was for Italians, at another for Germans, and the result was, that though a very few excellent musicians were thus imported, the majority were needy adventurers, and the consequences were disastrous for military music in this country.

It is very satisfactory to note that at this period, two of the best bands then in England (Royal Artillery and Coldstream Guards) were controlled by Mr. Mackenzie and Mr. Charles Godfrey, whose names bespeak their nationality. Mr. Mackenzie, I may explain, was the bandmaster of the Royal Artillery about that time, and Mr. Charles Godfrey, the father of the three Godfreys who afterwards served in the Brigade of Guards—Fred Godfrey, Dan Godfrey, and Charles Godfrey, was the bandmaster of the Coldstream Guards, and served for a period of about 40 years. My remarks now, I may explain, apply more to the bands of the Line regiments than to the bands of the Guards, Royal Artillery or Marines, or any of the Staff Bands.

Until recent years the possession of bands was regarded as a luxury. The bands were dressed and equipped according to the tastes of the officers, and the financial condition of the Regimental Band Fund (which in those days was kept up entirely by the officers) had much to do with the quality of the band. All expenses for pay of professional instructors, musical instruments, and music, were borne by the officers unaided, and only a few men of each regiment were allowed to be trained musicians. Regiments officered by men of means were naturally enabled to secure the services of able professors for the instruction of their musicians, though they were not infrequently far removed from the status of professorship. As I have already remarked, many of them were adventurers and known imposters, having been in some cases taken off the streets by instrument-sellers, dressed up, and palmed off on unsuspecting regiments as professors of the first water when in reality their chief qualification consisted in their ability to speak broken-English. It was chiefly with a view to getting rid of this class that "Kneller Hall" was established. The chief credit for this undertaking is due to H.R.H. the Duke of Cambridge, who established the Royal Military School of Music at Kneller Hall in 1857. This institution has now developed to a degree which entitles it to take a prominent place among the musical colleges of the nation. As in the case of the inception or dawn of military bands, the tentative efforts of Kneller Hall were extremely modest. The School commenced with 8 or 10 students for bandmasterships, gradually increasing the number to 15 or 20, and now the number is from 40 to 50. At first Kneller Hall was supported by regimental subscriptions, with a small grant from Government. Regiments were free to subscribe or not, as they thought fit, but of course only subscribers

could send pupils or students, and as many of the old officers (especially those who were wealthy) preferred the ancient type of bandmasters, the support was anything but general. I may explain here that the term "pupil" is applied to boys who are sent to Kneller Hall for training on various instruments. They remain at the institution for 12 or 18 months, possibly more, and are then sent back to the regiments to which they belong, in order to take their places in the ranks of the bands as instrumentalists. The term "student" is applied to those band-sergeants in regiments who have shown by their ability, musical knowledge and general bearing that they would be likely to turn out good bandmasters. They are sent to Kneller Hall with a view to their becoming bandmasters of the Army.

On the formation of the Royal Military School of Music, H.R.H. the Duke of Cambridge extended his patronage still further. Major Whitmore, who was the first Commandant, served Kneller Hall with great ability and loyalty for years, and in 1880, having attained the rank of major-general, retired from the Service. It was he who laid the foundation of the lines upon which the business of the school should be conducted. Those lines have been altered and enlarged by successive Commandants, but not obliterated, thus proving the correctness of Major Whitmore's judgment. Major-General Whitmore was succeeded by Colonel Thompson, an officer whose memory is highly respected by many of the senior bandmasters of to-day. Colonel Shaw-Hellier was the next Commandant, and he advocated numerous projects for the benefit of military bands, bandmasters, and bandsmen. In 1893 Colonel Shaw-Hellier retired, and was succeeded by Colonel Brooke Meares, who died within a year. Colonel Farquhar Glennie was the next Commandant, he being succeeded in turn by Colonel Barrington Foote, the present Commandant.

Herr Schallen was the first director of music appointed by H.R.H. the Duke of Cambridge, and he it was, you may remember, who occupied the post of conductor at the Crystal Palace before the advent of Mr. Manns. Mr. Schallen was succeeded by Mr. Mandel, a distinguished musician, who deserved well of Kneller Hall, for he wore himself out in its interests. He was an excellent teacher, and among his pupils some of the finest bandmasters in the Army could be named. Mr. Mandel died in 1874, when he was succeeded by Mr. Charles Cousins, who had served in the 1st Life Guards, and also for many years as bandmaster of the 2nd Queen's Bays. Mr. Cousins died in 1890, when the War Office authorities decided on making the appointment a military one. It was thrown open to competition, and three of the seven candidates fulfilled all the requirements, the appointment being given to the senior, Mr. S. C. Griffiths, bandmaster of the Royal Military College. As Director of Music, Lieutenant Griffiths was a great success. He was an honorary member of the Royal Academy of Music, and an examiner, under its board, in bandmastership. Lieutenant Griffiths died suddenly in October, 1895, his successor being the present director, Lieutenant Stretton, an able musician, who has done admirable work during the time he has occupied the position of Director of Music.

A good deal might be said here concerning the determined and bitter opposition, now fortunately a thing of the past, to the establishment of Kneller Hall by interested parties. As is usual in the case of all reforms, whether important or otherwise, vested interests blocked the way. I am informed on the best authority that some of the musical

instrument-sellers of that time were just as much opposed to a Military Music School as the most paltry makeshift of a bandmaster. They left no effort unspared in their endeavours to suppress the new school. One might reasonably have expected something more patriotic from our native instrument-sellers, for they were only opposing their own countrymen in favour of foreigners, and some of these foreigners were very unworthy subjects, as is proved by the fact that their treatment of the bandsmen entrusted to them for instruction frequently led to serious crime. If it be not too uninteresting, I should like to pursue this a little further by stating that one of the stock arguments against Kneller Hall at the time was, and is even occasionally heard now: the utter impossibility of making a bandmaster within the allotted time. "How is it possible to manufacture a bandmaster in two years?" was continually asked, and that most persistently by the worst specimens of the existing class. These bandmasters overlooked the fact that they were cutting the ground from under their own feet, as the question was a clear acknowledgment that they were incapable of teaching anything to the people placed under their tuition. Men at this time who were sent to Kneller Hall to be trained as bandmasters were invariably band-sergeants. These band-sergeants had enjoyed the privilege of being under these bandmasters for years, but, according to the latter's own showing, had learned nothing. This was an argument of the boomerang sort, and may, I think, now be dismissed. It may be said that candidates for Kneller Hall must generally evince aptitude for music. In many cases the young hands, or beginners in the band, were left entirely to the band-sergeant—in fact, in the old days, he did most of the teaching. Many of the old bandmasters of the superseded class considered it derogatory to teach a "young hand"—they were conductors! Many band-sergeants study for years before going to the School, so that they enter it with thoroughly receptive minds. I think that the enquiry, which was supposed to be crushing, "How can you manufacture a bandmaster in two or three years?" has been pretty well answered by this time.

After a successful examination at Kneller Hall, a bandmaster, on appointment, is naturally anxious as to the sort of band he is to have committed to his charge—anxious not only as to the "quantity" but the "quality" of those constituting the regimental band. These considerations are greatly affected by chance circumstances of station—some stations, on account of climate, etc., being more detrimental to efficiency than others. I would like to explain what I mean by that. There is no comparison of the difficulties in the way of training a band in England as contrasted with India. In India, during the summer months, the band is invariably partly broken up. I was at several stations in India, and in one in particular, at Cawnpore, out of a band of 56 or 58 performers, only about 15 to 20 were available on the plains during the summer months; the others were sent to the hills for their health's sake; and during those summer months we had to get on as best we could. Mine was not an isolated case. There are many of the same kind, in fact what I have said applies to many of the plain stations in India. In the hills, of course, the bands are better off, but what I have mentioned will suffice to show that the difficulty of keeping bands going in India is far greater than it is in England. It is also difficult for another reason. In India the regiment has not the same opportunity of getting boys for the band that it has in England. In England the bandmaster, through the kindness of the officers of the

regiment he is serving, can go to the schools and select boys. In India the bandmasters cannot do that; their commanding officers have to apply home, and the boys are first enlisted from the schools and then sent out to India. The boys may be fairly good players, but they may know very little about their instruments. Some of them have been badly taught, which is the worst difficulty of all, because their methods have to be re-modelled by the bandmaster when the lads arrive in India to join the band. The same difficulties also apply to Africa, but not to so great an extent as in India. No doubt they would apply also to China, the West Indies, and any foreign station where you have exceptionally hot weather. The difficulties of practising sometimes in the summer months, when the punkahs are going and the thermometer registers from 100° upwards, are very great.

As a rule, with few exceptions, bands coming from India are in a more or less crippled state, and this from a variety of causes. Consequently the bandmaster finds that his new position is likely to prove anything but a sinecure; but, when energetic and determined to make something out of the remnants at his disposal, he usually succeeds in forming a good band, and therefore establishes his reputation as an efficient bandmaster, thus generally gaining the respect of his regiment. My own experience of a bandmaster is that, if he be a good musician, with his work thoroughly at heart, and on going to his regiment makes up his mind to create a good band, and enters at the same time on his work with energy and determination, he invariably receives the support of his officers. It is the man who joins his regiment and is somewhat indifferent to his work, his band, and himself, and possibly does not make himself agreeable in helping with the entertainments in the regiment—which I think it is part of his duty to do—who does not get on. When I was in India I noticed that those bandmasters who helped in getting up the entertainments, and made themselves generally useful in the regiments, always received the support of the officers, invariably made headway, and possessed the best bands. It is those men who go to a regiment and take it for granted that everything will come to them, and leave part of their work to their band-sergeants and others, who do not succeed.

One of the first cares on assuming charge of weakened bands is to endeavour to augment the numbers. Then comes the selection of candidates, which is very important, as a judicious selection may save much unprofitable labour, such as working with a man for three or sometimes nine months, hoping that some morning he may awake and find the cloud lifted, but unfortunately forced at last to give the candidate up as a hopeless specimen, possessing no feeling of time, an utter absence of ear, a sort of musical colour-blindness in fact. It follows from this that the successful selection of band candidates is a very important preliminary. In the matter of ear, the test generally applied is obvious and easy, the candidate being made to "whistle" or "sing" the tune he is best acquainted with. Of course there are other methods less primitive than this, perhaps, but in any case the fact remains that a test should be applied. If these preliminaries are satisfactory, then the teaching may commence. The result is often just as I have described it.

To turn now to *teaching by routine*, for most instruments at the present day there are excellent methods or instruction books. Frenchmen seem to have been the most prominent in the production of these useful works—Berr, Klosè, Arban, Barrett, and a host of others. I

use the phrase "Teaching by Routine" as a definition of teaching from these and kindred works in classes or groups. The exercises are progressive, and as nearly as possible *adapted* to the dawning musical intelligence of the learners. This has been found to succeed in many obstinate cases when other methods have failed. For instance, where the feeling for time or rhythm is deficient, the teaching of syncopation is often very troublesome, and ought, therefore, to be written out in a variety of ways so as to appeal to the eye as well as the ear. I may say here that in my opinion a ruled blackboard with musical lines should be compulsorily placed in every practice-room of every band in the Army. If such blackboards were there, illustrations could be placed on the blackboard of the passages that are to be played, which the young hands and boys can look at, and in that way learn a great deal. Very often the bandmaster is talking about a certain thing, and cannot describe it adequately; even by taking the instrument from the performer sometimes, it often cannot be described so well as writing it on the blackboard. That is a thing which is very much neglected in some bands; it is a great pity because, from my own experience of teaching, which extends over many years, I have found the blackboard a very great help indeed. The time generally devoted to practise varies from three to four hours a day. If a learner is pleased with his instrument, and is anxious to learn, he will find means of extending this to six hours, but four hours is a very good average. I must explain here that the bandsman in the Line regiments often has other duties to perform in addition to his musical duties, for instance, he has to go through his course of musketry, military training, and so forth, the same as the soldier in the ranks. In short, he is supposed to be a drilled soldier, so that the whole of his time cannot be devoted to music. It frequently happens that young hands are greatly discouraged and impeded by "old hands" in the band—who are invariably the most useless. They not only set the young ones a bad example, but discourage them in many ways which might appear trivial in themselves, but none the less are a real source of irritation to a bandmaster anxious for the progress of his young people. This class have to be narrowly watched up to the moment of their exit. It is a matter for congratulation, though, that often the direct contrary is the case. There are frequently well-disposed men who are willing, to the best of their ability, to help beginners. As soon as possible the "young hands" should attend the general practice, endeavouring to follow and turn the parts for the players. They learn a great deal by this, besides which they hear all the remarks made by the bandmaster to the particular instrumentalist in whom the learner is interested. Intelligent learners acquire a great deal by this continuous lecturing day after day, which must in time prove beneficial. It goes without saying that an efficient bandmaster must be capable of conveying a clear idea and explanation of the intentions of the composer he is dealing with.

In my opinion students who are studying for bandmaster-ships should take the opportunity of attending performances of the grand operas as often as possible, as it is there that one hears the best of operatic vocalists, an excellent chorus and orchestra, and can watch conductors of the first rank, so that one has not only an opportunity of studying good playing, good phrasing, style, and *ensemble*, but also of becoming better acquainted with operatic music generally. When the student is appointed bandmaster, he then knows

much better how to conduct and take his band through an operatic selection according to the composer's intentions, if he has attended frequently those performances at the opera. It is also essential he should attend occasionally and hear the lighter operas and musical comedies, as he has to be constantly playing them, and it is only right he should know something about them. An occasional visit to the symphony concerts should likewise be made, and, not least, those little chamber concerts that are given at St. James's Hall and Queen's Hall—most admirable concerts in their way. For some years these concerts were not held, but they have been revived recently. It is often said that when the band of a Line regiment has to play inside the mess-room it has nothing to play but operatic and other selections. This should not be the case, because there is plenty of chamber music written which I am sure would be most agreeable to the officers if well rendered. I think glee singing ought to be encouraged also. I had a glee class in India, and I know that another regiment had a class, and not only could the class sing at the officers' mess, but give concerts almost by themselves. If that can be accomplished in one or several regiments, I think it can be achieved in most of them. It only needs a little attention.

There is another matter connected with the conductors of military bands I should like to mention: It is not always the fault of the conductors that the *tempo* and the movements of the selected pieces are not marked and arranged properly. That is very often the fault of those who arrange the selections, etc., for the military band, and not the fault of the composer. The publisher should insist that every man who arranges music for a military band of an operatic nature should go to the opera, hear the music himself, and then mark how it is to be played. It is hardly possible for a bandmaster, who may be in India or anywhere else, and has not heard the opera, to give the correct reading of the music without something being indicated, and that indication should be in the way of some explanatory note from the man who arranges the selection. I mention this by the way, and hope that the publishers may take note of it. In some cases the men who arrange the music do go to the opera, but in most cases I think they do not. As I said before, it goes without saying that an efficient bandmaster must be capable of conveying a clear idea and explanation of the intentions of the composer he is dealing with. This especially applies to operatic music, where the intention of the composer is so easily arrived at, and is generally productive of the happiest results. It is sometimes a matter of astonishment how different is the playing after an illustration of this kind as compared with previous efforts. This is an essential in the best bands, as well as in the worst, as it greatly conduces to *unity of expression* in the rendering of a musical subject.

A vital point in the success and efficiency of a band is the *tuning*. It is no uncommon thing to find an otherwise good band utterly ruined by want of attention to this indispensable condition—that of being in tune. Individual members may be the most brilliant performers, but if they do not agree in this particular their efforts are ineffectual—it is simply wasted energy. If a band is *generally* out of tune, it is the bandmaster who is in fault without the least doubt. A single instrument may be out of tune occasionally, either by accident or owing to some unforeseen cause, but if lack of unison is the general condition, the bandmaster alone is the culprit.

The establishment of bands of the Infantry of the Line is 20 men, 1 sergeant, and 1 corporal, with a few boys added. As this number would not suffice to keep a good band going, extra men are taken from the ranks to augment the band, so that on an average the bands of the Line would number from 35 to 40, and some bands more. In the cavalry the numbers are less.

In some regiments of the Army string bands are the fashion, but, to my thinking, they are a great mistake in Line regiments; in fact, I would go so far as to say that they should not be permitted. I have never known, throughout my experience of over 36 years with the Army, of a regiment or battalion which, possessing a good string band, also had a good military band—one or the other is almost bound to suffer, and frequently both. In India more than in England the expense of maintaining a string band is very great, and during a portion of the year—that is during the monsoon weather, which lasts about three months—the stringed instruments have to be treated with great care. At one station where I was located we had to put the string instruments away during the monsoon season, placing them in a room with charcoal stoves burning night and day. As you may well understand, this was a great expense to the officers of the regiment. One battalion I know which started a string band, had at the time one of the best military bands in the Service, but so much attention was devoted to the strings that in less than a couple of years the military band had fallen to quite a second-rate combination, and continued so for some years, in fact until the string band was given up altogether. If good players (instrumentalists) in civil life do not find the time or think it worth their while to be double-handed, that is to play a string instrument and a wind instrument as well, I think this should apply all the more to military musicians, who have less time at their disposal for even learning one instrument. The bandmaster has not time to devote to both the string and the military band—he could not do it—it is a sheer impossibility, and one or the other band must suffer. I allude now, of course, to the bands of the Line regiments. I am not referring to the staff bands of the Army.

As regards the music used in military bands, it is generally transcribed from operatic and orchestral pieces. It is to be regretted that there are but few works written by eminent men for military bands. In the little that has been done in this field Meyerbeer stands out prominently. In operatic music some composers, by the style of their compositions, are much more favourable to military bands than others. That grand old master Verdi, for instance, favours them exceedingly by his broad melodies. Most of the Italian composers (especially Rossini) are equally favourable. Handel, Mozart, and Auber are likewise great favourites. The "arranging" itself would require a treatise in order to do it full justice. Operatic music is generally dealt with by one set of instruments representing the vocal element, while another set represents the orchestra for accompaniments and general colouring. Orchestral works are somewhat more intricate, requiring considerable art to reproduce, as nearly as possible, the orchestral effects intended by the composer; as I have just observed, a distinct treatise would not exhaust the subject—it is a many-sided one.

I hope to treat this subject of arranging in my next lecture somewhat more elaborately, and at my third and last lecture I am, with the permission of Colonel Sir Francis Graves Sawle, providing for a contingent of the Coldstream Guards' Band to attend to play over some

of the arrangements which I will present to you at my next lecture. On this day week I will deal with the music used in military bands, also the instruments used in our own bands, and those used in foreign bands. I may explain that I shall have a full set of instruments here, and deal with each instrument, explaining the technical and other difficulties of each, and its capabilities. I shall also deal with military band scoring and arranging.

Many bandmasters, especially those serving abroad, have very great difficulty in keeping their bands going, because they cannot get boys. If you ask for volunteers from the ranks, you will get men of 18, 19, or 20 years of age, who have never been taught music. Many of them possibly come from the plough. Such volunteers are sometimes asked for to join the band with a view to the men being trained to take the place of those who are going away. In India, of course, the difficulty is far greater. I remember when I joined the Queen's Regiment at Peshawar, in 1882, I took over a band of 32 performers, but the following season I lost 17 of them. I could not get boys sent out, because at that time there was great difficulty in obtaining them. The consequence was I had to ask for men from the colonel of the regiment, who was kind enough to place a draft of 250 men at my disposal. But I did not want 250, so I called for recruits to join the band out of that number, and 25 volunteered. You can imagine the difficulties I had to encounter when I tell you that not one of those 25 men knew anything about music—not a note. I managed to get 15 from among that number, and they gave fairly good results; three of them turned out good players, but the others were only fairly competent. That experience of mine is the experience, no doubt, of many others. It is very often the case in England also. If it were possible to have more boys, I am sure the bands would be even more efficient than they are now. Taking the bands all round, I think they hold their own, when you compare the system upon which the bands in England are worked with the system on the Continent. On the Continent trained men join the Army at the age of 18; they have no boys in the Army at all. Every man must be a good instrumentalist on joining the band, so that the bandmaster has no teaching of the young hands to do at all in the bands of foreign Armies. Here in England boys join at 14 years of age, sometimes, in special cases, under that age, and they have to be taught by the bandmaster who is appointed to the regiment or battalion. But on the Continent the bandmaster has nothing of that sort to do; he takes over the ready-made instrumentalist, which makes his work much easier. I think, taking that into consideration, and comparing the bands, our own present themselves in a most favourable light, taking them all round, in comparison with the bands of foreign nations. If there were more boys in the regiments the bandmasters could do still better work, because you can teach a boy almost anything—for instance, you can teach him to be a good solo player, whereas it is most difficult sometimes to teach a man who comes from the country, or wherever it is, a few ordinary scales.

I beg to thank you, my lord, ladies and gentlemen, for your kind attendance, and I hope I may be honoured by your presence this day week.

Mr. A. V. BARWOOD (Bandmaster, 1st Bn. Royal Berks Regiment):—Mr. Rogan mentioned just now the question of playing chamber music by military bands to the officers of the regiment. I may say that as a

bandmaster, I tried chamber music abroad, but it did not meet with the success which Mr. Rogan's efforts seem to have done. I found that my officers did not appreciate it at all. I took a good deal of trouble over it: I obtained a lot of specially arranged music, and worked it up, but it was not appreciated. Of course it depends a good deal on the tastes of the officers. With regard to his remarks on glee singing, I quite agree with him. Glee singing was very much appreciated. I can fully endorse what the author says about the boys. I have one at present who has been with me for three years, and who is absolutely useless. I have tried to get rid of him in every possible way, but cannot. I even tried to get him sent out of the Service as not likely to be an efficient soldier, but it did not answer: I cannot get rid of him until he becomes a man and goes into the ranks. That boy is filling the place of a possibly useful lad, because if I could get a boy from a school, he would no doubt be of great use to me. There is another point I should like to draw the author's attention to, which perhaps has escaped him. The establishment of a band is one band-sergeant, one corporal, and 19 men, or one band-sergeant and 20 men. The band-sergeant although shown in the regulations as on the establishment of the band, is really a sergeant belonging to a company. On the strength of the battalion he takes the place of an ordinary sergeant, with the consequence that the company to which the band-sergeant belongs is one sergeant short for duty. I consider that that is a point which might be brought to notice: the band-sergeant should be really on the establishment of the band, as he is supposed to be, according to one paragraph of the King's Regulations. I do not know whether that escaped Mr. Rogan's notice, or whether it was not sufficiently interesting to introduce the subject, but it is a point I have noticed myself.

Mr. ROGAN, in reply, said:—With regard to the remarks made about the band-sergeant, it is not my object in delivering lectures here to touch on any point of discipline. I should consider it out of place myself were I to discuss the question as to whether the sergeant should be placed on the company's roll or the band roll, or any other roll. It is sufficient that the Secretary of State has decided what the establishment shall be, and it is not for me to suggest alterations. That is the reason why I have not touched on this particular point.

The CHAIRMAN (General Lord Chelmsford):—It becomes my pleasant duty in your name—and I am sure I am correct in saying that you are very anxious to do so—to return a very hearty vote of thanks to Mr. Rogan for his interesting lecture. There is no doubt about it that the question of the formation of military bands is one that has never been ventilated in this theatre before, and I think we are very much indebted to Mr. Rogan for bringing it forward. As the commanding officer of a Line regiment, I know perfectly well the difficulties that beset the bandmaster in getting a really efficient band under all the difficulties which Mr. Rogan has described. I have served in India, and I know perfectly well how heartbreaking it is to see all your best instrumentalists sent up to the hills—of course it is only right that they should go for their health's sake—and the band left for about three months with only perhaps the very strongest men in the band, who sometimes may not perhaps be the most efficient. With regard to the historical account which the author has given of the formation of bands, I may perhaps be allowed to correct Mr. Rogan in regard to his dates as to the existence of black

men in the band—negroes. The date he gave was 1837. I joined the Grenadier Guards in 1845, at that time the Grenadier Guards band had three playing negroes. I am not quite sure when they disappeared, but they did so very shortly after that date. I sincerely trust that the next lecture which Mr. Rogan is going to give with regard to the different instruments that are played and their difficulties, will bring forth a larger audience. The question is one of extreme interest; and I am quite sure if those who have never had occasion to have a wind instrument explained to them were to come here, and to know exactly the different quality of tones, and the different difficulties which beset the player, they would take a very much greater interest when they attend orchestral performances either at the opera during the Wagner performances, when the orchestra plays such an important part, or even the Symphony Concerts. They would know when they heard the particular instrument which is bringing out the *motif* of the air or the piece, and I am quite sure their interest would thus be enormously increased. With these words I beg to tender in your name, and in the name of the Royal United Service Institution, our best thanks to Mr. Rogan for his interesting lecture.

THE FRENCH NAVAL PROGRAMME OF 1900-1906.¹

*By M. de LANESSAN, Member of the Chamber of Deputies,
and late Minister of Marine.*

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THE first edition of *Le Programme Maritime* was published anonymously in Paris rather more than a year ago, but it was soon rumoured that it was the work of M. de Lanessan, the Minister of Marine, and it consequently had a considerable sale. All doubt as to the authorship was set at rest when the second edition was brought out, under M. de Lanessan's name, in the early part of this year. To this edition the author has added a short preface, in which he points out that his object was to place before the Navy, the members of Parliament, and the public, the reasons which caused the Government, of which he was a member, to adopt the building programme of 1900-1906, which had been elaborated by the Superior Council of the Navy and the Naval General Staff. In view of the rapid increase of foreign Navies which was going on, it had become necessary to take some effective steps for strengthening the French fleet, and it is noteworthy that, for the first time in thirty years, the programme brought forward by the Ministry of Marine was unanimously accepted by the Government and Chambers. M. Pelletan, who succeeded M. de Lanessan last autumn, delayed the work on the new programme for some time, but his action has not been approved by the Chambers, and the work is now being pushed forward. M. de Lanessan, who has been Governor-General of French Indo-China, as well as Minister of Marine, is looked upon as one of the coming men in France, and as he is a keen student of naval matters, and in full accord with the senior officers of the French Navy, his views on the naval policy of his own and this country are of interest.

INTRODUCTION.

FRANCE AND NAVAL POLICY.

The author commences his introductory chapter by remarking that there are many Frenchmen who are systematically opposed to all increase of their country's naval power. On the one hand, there is a numerous class of persons, who have never left their native land, who, knowing nothing of the sea, regard it with much the same superstitious awe as did the ancients, and who live their lives out utterly unaware that the ocean they dread forms the great highway of communication and of trade between countries otherwise widely

¹ "Le Programme Maritime de 1900-1906. Par J. L. de Lanessan, Député, Ancien Ministre de la Marine. 2nd Edition. Paris: 1903.

separated from each other, and who repudiate all development of the naval forces, because they are unable to understand its object or the pressing need for it.

There are others, again, who remain hypnotised before the Vosges. Their minds still run on what they learnt in their youth of the military glories of their country, of the victories won on the Rhine, in the Alps, on the Elbe, the plains of Austria, and the forests of the Ardennes; while they also bear in their memories the defeats inflicted on France by certain European nations, and they look upon all expenditure as thrown away, which does not add to the strength of the Army, or the development of the fortresses which encircle their land frontiers. If they reject all idea of an increase to the Navy, it is because they hold that the fate of the country rests entirely in the hands of the Army.

Finally, there are those who object on the score of finance, holding that it is not possible to maintain both an Army sufficiently strong to resist all hostile attack, and at the same time a fleet, powerful enough to prevent rivals from having the mastery in the waters which wash the French coasts. And a course of action finds favour with them, which, in the opinion of M. de Lanessan, is the worst possible, viz., to maintain only "a purely defensive fleet, in other words, one powerless to take the offensive, should the necessity arise, as if it were possible to compel our enemies to attack only at those points where the conditions of defence are most favourable for us."

M. de Lanessan next proceeds to trace the growth of French colonial and maritime power. Pushed for centuries towards the Atlantic on the west, the Channel on the north, and the Mediterranean on the south, by the continued invasions of barbaric hordes from the east, the population of France was perforce compelled to settle in ever-increasing numbers on the shores of the seas which washed their native soil, and from thence to venture across them in search of quieter lands, where wealth would be less exposed to the depredations of invaders, and their homes and families could be better protected from the brutalities of conquerors. Thus the sunny regions of North Africa tempted some, while others more hardy and adventurous launched themselves on the great ocean, beyond which the sun set, in search of unknown countries and new products. Whilst the pursuit of whales drew the Basque sea population from the ninth century towards the shores of the American continent, only discovered by Columbus some six hundred years later, the taste for military adventure and religious zeal drove the French aristocracy to the conquest of Palestine, and the destruction of the Mussulman pirates of the Mediterranean, while later adventurers from Dieppe founded the first European establishments in West Africa.

During all the period of grand discoveries which marked the commencement of the sixteenth century, French seamen rivalled those of Spain and Portugal, in spite of the indifference with which their Kings treated all questions relating to naval and colonial expeditions. While Spanish and Portuguese seamen were aided in every possible way by their respective Governments, those of France owed their success and the wealth they brought to their chosen ports to their own unaided efforts. It was only with Francis I. that people began to ask themselves if "Our First Father had, by chance, awarded the world to the Spaniards and Portuguese, to the exclusion of the French," and that French Governments began to show some regard

for the expansion of their country's interests and of their fellow-countrymen beyond the narrow frontiers of their own territory. Comparatively feeble though the encouragement was, which was given to the French Navy by its Kings, yet from that date, so great became its expansion that by the middle of the sixteenth century France was on the road to become the first maritime nation of the world; while all her leading spirits at that period were beginning to recognise the necessity for naval development and expansion beyond the seas.

It was Admiral Coligny, who, after the peace of Amboise, which for a time brought the era of religious persecutions to an end, made the interesting experiment of creating a French settlement in Brazil. Later, Henry IV. gave the whole weight of his authority to founding French colonies in Guiana and South America. Then it was Richelieu, who wrote in his will:—"It would seem that nature wished to offer the Empire of the seas to France, by the advantageous situation of her coasts, which are equally well provided with excellent harbours, on the Atlantic and the Mediterranean." The great Cardinal had, moreover, employed his power in developing the Navy, had captured Canada from the English, founded colonies in the West Indies, and laid the base, by means of a French company, of the future occupation of Madagascar. Later again, thanks to the efforts of Colbert, it was a real Colonial Empire with which France was endowed, by the extension of her Canadian possessions and the occupation of Louisiana and Madagascar, while definite principles for organising the fleet on a war footing were laid down. France had then reached the apogee of her military, naval, colonial, and political power; and over and above that she was able to live in peace.

By an agreement concluded with the Protestant nations of the Continent, and afterwards with England, Richelieu and Mazarin had destroyed for ever the hegemony which the Catholic monarchs of Spain had exercised in the name of the Pope, since the reign of Philip II. The frontiers of France had been extended further than they had ever before reached; she was treated with respect, even if she had not the sympathy of the other European Powers, and she was in a position to avoid war if she wished to do so. At home, the feudal aristocracy no longer existed, the financial *bourgeoisie* was not yet fully conscious of its strength, the Church was submitting to the civil power, the common people were rejoicing at being freed in part from the odious servitude under which they had suffered under the feudal regime, even religious quarrels seemed forgotten, while the order and tranquillity which reigned all over the country were eminently favourable to the conception of a policy of peace and industry, which should have led to a general state of well-being and a moral grandeur, such as France had at no period yet enjoyed.

It really seemed for some years after the death of Cardinal Mazarin, and Colbert had assumed the direction of affairs, that the care of the commerce, the Navy, and the industries of the country ought to take the first place in the mind of the young King (Louis XIV.), as a prelude to the exercise of absolute power. Undisputed master of his own destinies and of those of his kingdom, as far as it is possible for a sovereign to be so, it depended on him alone to make of France either a peaceful, commercial, maritime and colonial nation, or a military and conquering one.

In the first case, he would have extended, as far as might be found expedient, the influence of his country outside Europe, in all parts of the

world, by the development of the colonies already in existence, and by the founding of new ones, where would have been distributed, along with the blessings of French civilisation, already the highest in the world, the products of her budding industries, of her agriculture and her commerce, which her ships were already carrying to all parts of the globe. The sole condition required to carry out this policy was for the King to maintain with European Powers the amicable relations established by the Cardinals, who had prepared the way for his reign, and that he should steadily resist the temptation of taking part in the religious struggles, which were still a cause of dissension, after having during many centuries disturbed the peace of all Europe. He would have been the best-loved King that France ever had if he had known how to use the absolute power with which he was invested in order to assure his people peace and work.

On the other hand, he could, like Philip II., entertain the idea of establishing a military and conquering monarchy, round which he would group *nolens volens* all the Catholic Governments of Europe; and at that time, circumstances were such, that he was quite justified in hoping for success for this audacious scheme. Spain and Austria were broken and ruined, the Protestant States of Germany were divided and powerless, England was in the throes of internal revolution, the Low Countries cared only for recovering their independence, and the United Provinces would join with anyone who would save them from the yoke of Great Britain.

But if the material and moral interests of the country pointed to a policy of peace, which would by force of circumstances be also a maritime one, there were not wanting other rival interests, without speaking of atavism, to advocate a continuance of the Continental and necessarily bellicose policy, to which France had up till then been condemned in order to achieve her independence and consolidate her unity.

The young King was not, it is true, prepared himself to make war, he seemed to have no taste for it, and he was not endowed with the physical or intellectual qualities, which it required, but he was surrounded by generals, who had already given proofs of their military capacity, and who hungered after new victories.

The nobility had ceased to be a political aristocracy; they had been despoiled by a growing financial *bourgeoisie* of the greater part of their territorial fiefs, which in former times constituted their wealth and strength. Reduced simply to a military and courtier caste, the nobles could only from this time look to war to enhance their prestige and restore their fortunes. Their interests and ambitions naturally led them to favour a warlike policy, and it was only during periods of defeat and peace that they turned their thoughts towards over-sea expeditions. At that time all their desire was for a Continental war, and, with the generals at their head, their dream was to make Louis XIV. a great rather than a popular King.

Finally, there are certain temptations inherent in despotism, to which the new King was all the more prone to yield, seeing that he was only twenty-two, with no experience of life; so six years after the death of Mazarin he was launched headlong into Continental politics, eager for the glories of conquest. At first there were abundant harvests of laurels and popularity; but after a reign of sixty years, he left France exhausted, her frontiers contracted, deprived of nearly the whole of her Colonial Empire, destitute of a Navy, with her few merchant-ships a prey to insolent enemies, and, above all,

riveted to a Continental policy, which was to be the source of other evils. And it was not only the dreams of absolutism formed in his youth that the old King had to renounce. At the same time that he was despoiled of his conquests and his glory, he saw springing up around him the seeds of emancipation and revolt, the result of the mortifications, the ruin, and the misery which marked the close of his reign.

At the same time that Louis XIV. made his choice from the two policies open to him of the one, which after years of glory brought on him the infamy of having ruined France, England had to make a similar choice.

Under Cromwell, she had learnt the satisfaction of military glory; at one time even she had seen, not without complaisance, the Dictator dream of the founding of a vast Federation of the Continental Protestant States, whose high destinies would be worked out under the hegemony of England. "The change in the Foreign Policy of England," writes an English historian,¹ "brought about by the fall of the monarchy in 1649, was radical and unexpected; instead of becoming more pacific, it became, on the contrary, distinctly more bellicose in becoming national. The constant tradition of English policy had been for a long time peace and non-intervention pushed to extremes. England had intervened nowhere, except when absolutely necessary for her security. When the dynastic Government was overthrown, with it were scattered the peaceful traditions. England became more martial than she had ever been since the hundred years' war with France. She entered, as was only to be expected from the personality of Oliver Cromwell, and the Imperialism he represented, upon one of the most warlike periods of her history. Imperialism, by its nature, counts among the monarchical Governments. Even as an army has its commander-in-chief, so government by the Army means naturally government by its Head. The Army being sovereign, to make war is the natural policy responding to its needs." It was a military epoch *par excellence*. The lessons of Maurice of Saxony, Gustavus Adolphus, and Wallenstein had been turned to profit by European Governments. Standing Armies became the order of the day. But the State which became the most thoroughly military in all Europe was England, the country of Cromwell and Blake, where the Army was practically the Government, and its triumphs responded to the hopes to which its organisation had given birth. Mazarin abandoned Dunkirk to Cromwell, and the victory of the Dunes over Holland was the apogee of the military glory of the English Dictator.

But Destiny ordained a change. The battle of the Dunes was fought in August, 1658; Cromwell died in the following September, and his death broke the charm of military Imperialism under which the English people had begun to fall. Cromwell was scarcely dead when England renounced her Imperialism, and ceased to be a military State at the moment when her victorious military career was at its height. But from that time the sentiment of fear and aversion to Standing Armies became deeply implanted in the English mind. With the middle of the seventeenth century, that is, about one hundred and fifty years before the French Revolution, the ideas of liberty had already made such progress in England, thanks mainly to the Reformation, that the military dictatorship of Cromwell proved to be only a

¹ Sir John Seeley.

passing incident in the life of the nation. At this period the English nobility had already ceased to be a military caste, to become a purely territorial and political aristocracy, while the most intelligent and most active of the commercial classes, with the example of Holland before them, had turned towards manufacturing industries, trade, and the sea. It was, then, not astonishing to see how, immediately after the death of Cromwell, the aristocratic and middle English classes joined in repudiating the Imperialistic and Continental policy of the Puritan Dictator, which threatened the newly-acquired political and social liberties of the individual, in favour of a maritime, commercial, and pacific policy, which was alone compatible with the preservation of those same liberties.

With Cromwell there died in England the substance itself of monarchy. In spite of the restoration of the forms of Royalty, she from that time enjoyed an essentially liberal Government, which was, in consequence, necessarily pacific in its general attitude. Of all Cromwell's work, England was wise enough to preserve only two things, viz., the Navigation Acts and the Navy, that is to say, the instrument which was the foundation of her commercial Empire, and the powerful weapon which enabled her to protect it. While retiring within her insularity, she remained a great maritime Power, but she abdicated the commanding position she had so recently acquired in Europe. Not that she held herself entirely aloof from the great events which passed in Europe; she took her part in most of the great wars of the seventeenth and eighteenth centuries, but she played her important rôle at sea, and did not attempt to become a military Power. She left the anxiety and expense of large Armies to the Continental nations. As the expenses of Continental wars absorbed the largest part of the resources of these nations, and prevented their developing their Navies or mercantile marines, England saw her own fleet and maritime commerce increase in proportion as those of other European countries declined. "From the end of the reign of Louis XIV.," continues M. de Lanessan, "she became the greatest commercial country of the world; our Colonies passed into her hands; her merchant-ships circled the globe in thousands, and her fleet kept ours shut up in our harbours, if it was not to be exposed to bloody and ruinous defeats."

While England continued during the eighteenth century to develop and enrich herself, France, ruined, exhausted, and seeing nothing but enemies on all points of her horizon, was yet constrained, by the fatality which dominates absolute monarchy, to persevere in that Continental policy, so opposed to her geographical situation, to her interests and even to her ethnological genius, into which the folly and blind ambition of Louis XIV. had plunged her.

M. de Lanessan then points how, although during the reigns of Louis XV. and Louis XVI. there was a slight tendency to revert to the maritime and Colonial policy of Mazarin, yet the Revolution once more brought about a reversion to the old state of things. From 1791 to the end of 1794, the young Republic was defending its independence and new-won liberties against a combined Europe, and with such success that its Armies were everywhere victorious, and at the beginning of 1795 Prussia and her Allies were ready to make peace. France once more stood where she did when Louis XIV. came to the throne, and once more the choice of two policies was open to her Government, either to continue the Continental and bellicose policy of the past, or

to adopt a maritime and commercial one, which would bring her peace; dazzled, however, by the promise of even greater military triumphs, of new conquests, of that Rhine frontier, much of which had already been seized by the Republican Armies, and which had been the dream of Louis XIV. in the previous century; and, influenced by the generals and Army, who were intoxicated by the life of adventure, of promotion and honours, which war opened to them, "the Convention, after a momentary hesitation at the parting of the ways, determined, as Louis XIV. had done, to persevere in the former. Was it not the road which led to glory?"

"But," he continues, "it was also, unfortunately, the road which led to a military dictatorship and military conquests; then to defeats which invariably followed the victories; then the universal hostility which bellicose nations always excite; and finally, after twenty years of incessant wars, brought us by a succession of almost uninterrupted humiliations to the supreme catastrophe of 1870."

"And what of England," he asks, "the State which the Convention and Buonaparte dreamt of destroying? The State which, thriving on Continental wars, had roused general hatred against the Revolution, keeping alive all the wrath provoked by our victorious marches through the capitals of Europe; the State which Buonaparte intended to ruin by his Continental blockade, and to despoil of its richest Colony by an expedition carried out on the plans of Alexander the Great! She issued from the wars of the Revolution and Empire more powerful and richer than ever, and it was she which won the last battle lost by the Emperor. Her fleet remained without a rival, while her merchant-ships, distributed over every sea, were more numerous than those of the other combined nations of Europe."

"Once again, then, had the Continental bellicose policy left us exhausted, enfeebled, and with diminished territory, while, on the other hand, the naval and commercial policy of Great Britain had made her the richest nation in the world, and the first of the maritime Powers. And this result had been brought about because, at the end of the eighteenth century, as at the end of the seventeenth, when we could have adopted a policy suited to our geographical position, to our interests and to our genius, we were turned away from it by the personal ambitions, caste interests, and the atavistic passions, which again burned in the hearts of our rulers."

"Become again mistress of her destinies, by the founding of the Republic thirty years ago, under such conditions that neither the absolutism of Louis XIV., the Caesarism of Buonaparte, nor the dictatorial militarism of Cromwell have been able to take root again and flourish, Democratic France seems able at last to enter on the path destined for her by the nature of her soil, her geographical situation between the Atlantic and Mediterranean, the immense extent of her coasts, and the genius of her people. During the last twenty years, in fact, the greater part of her attention and her efforts have been directed towards the sea, commerce, and Colonial expansion, and since the re-establishment of the Republic she has spread more in the world than during the whole of the previous century; she has instinctively taken the roads, which absolute Monarchy, the Dictatorship of the Convention and militant Imperialism passed by without seeing."

In M. de Lanessan's opinion, a glance at the chart should be sufficient to convince anyone that, with the exception of the British

Isles, there is no country in Europe better placed to play the rôle of the great European emporium, which England has been allowed to monopolise. The French harbours on the Atlantic and Channel are admirably situated above all other European ports for the landing of the raw materials coming from the New World; while Marseilles is as well situated as Genoa, and better than other Mediterranean ports for ships coming from the Suez Canal or the Atlantic; and in her streams and rivers France has the means to her hand for constructing the most admirable network of waterways, and consequently economical communications that it is possible to conceive. The construction of new and the improvement of existing navigable canals joining her large rivers, themselves canalised, with each other, so that ocean-going vessels can ascend the Seine to Paris, is not an unrealisable dream, or the building of vessels suitable for internal navigation, which, traversing the large rivers, the Seine, Marne, Rhône, Loire, and Garonne, would by connection with the Meuse and Rhine on the one side reach Belgium, Holland, and Germany; and on the other, place Marseilles in communication with Switzerland and the frontiers of Spain, making France the territory for transit of the greater part of the merchandise, reaching Europe over-sea from different parts of the world, and Paris into a financial and commercial emporium, a Continental London in fact. Paris, in this respect, is better situated than London. France would be able to-day to rival England in the rôle of European emporium, had only a moiety of the enormous sums which have been absorbed by her Continental policy, resulting only in the loss of her Colonies and the contraction of her frontiers, been spent on the development of her canals, her railways, her harbours, and her economic industries.

A peace policy, the only one in reality suitable for democracies, is not, as its adversaries would have people believe, a policy of inertia and decadence. For hardworking and active races its definitive adoption must necessarily open an era of great works and great economic reforms. For a nation like France, placed between three great seas, and on the front of Europe, in possession already of considerable territories in different parts of the globe, a policy of peace would be essentially a maritime and commercial one; such as has made the greatness and the fortune of England, since she renounced the Imperialistic policy of Cromwell.

Contrary to the Continental and bellicose policy, to which no State in Europe could now commit itself without giving birth to legitimate distrust on the part of other nations, and exposing itself to inevitable military conflicts, for such a policy could only mean conquest, a maritime and Colonial policy only excites, *à priori*, simple rivalries of interest. If the policy is carried out with reasonable prudence, it is relatively easy to avoid quarrels. We have an example of this in the conduct of England, which now for nearly a century has not ceased to live at peace with France, although both countries have been great rivals from a maritime, commercial, and Colonial point of view.

It may be also said, perhaps, that the fact of the fleets of the two Powers having been for a long time nearly equal in strength has also contributed, in addition to prudence and sagacity, towards their maintaining peace with each other. It is indisputable that, in the

opinion of the majority of people at the present day, a display of force is, and will remain for a long time to come, the most precious guarantee of peace. Consequently, if, renouncing the policy of Louis XIV. and Napoleon, France is resolved to devote her whole energy to the development of her industries, of her commerce, and of her maritime and Colonial expansion, she must be sufficiently strong at sea and in her Colonies to preclude the possibility of any rival attempting to interfere with her peaceful expansion in her legitimate sphere in the world. "In other words, and to speak plainly, if we wish to become a great commercial democracy, which will necessitate a great development of our mercantile marine, and important progress in our Colonial Empire, we must possess a fleet of such a strength that no other Power can dominate, to our detriment, the European waters on which our harbours are situated, or the oceans where our merchant-ships circulate."

In favour of this essentially maritime and commercial policy, M. de Lanessan points out that it is of interest to note that the social rôle of the Navy is quite different from that of the Army. The men raised for the latter for military service are taken from their civil professions, from which they are kept during the whole period of their stay with their regiment, and it not infrequently happens that during this period they lose not only the taste but the aptitude for work. Thus service in the Army is considered, not without reason, as one of the most powerful causes of the depopulation of the country districts, and of the disdain with which certain professions are treated, whilst a considerable number of young men are driven to compete for official positions and towards sedentary, or less fatiguing professions, which, being already crowded, there are thrown back on the streets, on idleness and crime, a by no means inconsiderable portion of those who desire these positions.

It is quite otherwise with the fleet. Maintained to protect commerce and the mercantile marine, it constitutes, in addition, for the latter, a prolific source of seamen, stokers, artificers, and even officers. Many people imagine that the fighting fleet borrows all its men from the mercantile, and naturally consider the system detrimental to the latter. The reality, however, is quite the reverse. Among all maritime nations there exist ties between the fleet and the mercantile marine which render them both almost indispensable to each other. As in England the mercantile marine can no longer supply the men necessary for manning the fleet, so it is now in France. At present the *Inscription Maritime* produces barely two-thirds of the necessary number of men, and the other third has to be recruited from among the youths who are strangers to sea life. It is permissible to say that the bulk of these young men, on leaving the Navy, join the mercantile marine, and they would probably never have taken up a sea life if they had not been attracted to the Navy by the advantages which it offers. Whether the Navy recruits from among seamen by profession, or from classes unconnected with the sea, or trains up boys for the purpose in view of the special needs of the Service, it at least transforms into "seamen" the greater part of the persons it employs; it perfects the professional knowledge of those who already follow the sea as a calling, and educates those who come without any knowledge of it; while from both classes it is

preparing men for manning the mercantile marine;¹ and in neither case is it diverting men from civil professions. It is therefore quite permissible to consider this social phenomenon as furnishing an argument the more in favour of democracy according predominance to a maritime and commercial policy over a Continental and bellicose one.

It only remains now to consider on what base France ought to organise her Navy, so that it can be of the most service to her mercantile marine, and be most efficacious for protecting her political and economical interests, and in view of what eventualities this organisation should proceed. M. de Lanessan points out that in former days, England being France's great rival all over the world, the French Fleet was organised in view of war with that Power, and so long as the Government kept the possibility of quarrels with England in view, the naval organisation was powerful. When, however, towards the middle of last century, and under the pressure of public opinion on both sides of the Channel, a political *rapprochement* ensued between the two countries, the French Government neglected the Navy, forgetting that a solid and durable peace between two nations is only cemented when there is a reciprocal respect for each other's power. Napoleon III. cared only for the Army, his policy being the aggressive one of the first Empire, so that when war broke out in 1870 the fleet was unable to render any real service, although Germany had no Navy worthy of the name. After 1870, the efforts of France for the following ten years were devoted entirely to the re-organisation of the Army, the Navy being still neglected, and it was not until after the formation of the Triple Alliance that a programme was adopted which gave France a fleet sufficiently strong to take, if the necessity should arrive, the offensive against the combined fleets of the three allied Powers. England was not taken at that time into account, a war with her being considered at that time quite improbable. But since 1898 there has been an uneasy feeling in France that the possible contingency of a war with England could no longer be ignored. In the author's opinion, however, an *entente* with England is desirable and can be reached, but he impresses upon his readers, as another powerful plea in favour of a strong navy, that "England does not allow sentiment to enter into her policy, and consequently has most respect and sympathy for the *strong*."

Moreover, it is impossible to foresee what complications may not arise on the death of the Emperor Francis Joseph, and France may quite conceivably be drawn into the vortex of a great struggle, should one then break out, quite against her own will. In such a case, owing to her geographical situation, she will have almost entirely to rely alone upon her own naval forces, as her ally Russia can only dispose of a few ships in European waters. A powerful Navy would, therefore, seem an absolute necessity for France, and, in organising it, it is indispensable that not only should the naval strength of England be taken into consideration, but also the growing strength of the fleets of the Triple Alliance, for the battle-ship squadrons of Germany alone will soon rival those of France in the Channel. Nor can such an increase of

¹ M. de Lanessan is under the impression that the mercantile marine in England is largely recruited from men who have completed their time in the Navy, but of course this is not the case, as in these days our well-educated and smart bluejackets consider it quite beneath them to join the merchant service.

her fleet be considered in the light of a menace by any of her neighbours.

In concluding his summary, M. de Lanessan again recapitulates the natural advantages with which France is so richly endowed. "France," he continues, "is to-day in a position to correct the blunders which her rulers have made at all the previous critical epochs in her history, and is at last becoming awake to her true interests.

"A pacific Democracy, she wishes to live at peace; but taught by the bitter experience of the past, she has taken efficacious measures to make her frontiers and soil respected, as she intends to respect the soil and frontiers of her neighbours. The day on which she takes the same precautions at sea, she will be able to abandon herself to the commercial and maritime evolution for which nature has destined her, and to follow boldly the policy which she has been carrying out since 1880, after the reconstitution of her Army by the statesmen, who have carried the flag from Tunis to Tonquin, from Tonquin to the Soudan and Congo. Her domain extends to-day into every sea, and she is dowered with a Colonial Empire, in which, during an illimitable future, the French race will, in complete liberty, be able to exercise their genius and develop the economic institutions and the industries, which, with her geographical position, will in time make her the financial and commercial emporium of Europe. Towards this maritime and commercial policy everything is now pushing us. Let us then accomplish the destiny which nature has intended for us!"

CHAPTER I.

ON THE BEST CONSTITUTION OF A MODERN FLEET.

During the last fifteen years a lively and continuous discussion has been carried on in the press, both in France and abroad, on the question of the best type of ship to construct. Large or small displacements, armour or no armour, battle-ships or cruisers, high speed or moderate, cruiser warfare or the struggle of battle squadron against battle squadron, all have their advocates. This, however, may be pointed out: that while heated disputes on these points have been agitating the press and disturbing the public mind, every Navy continues to construct almost identical types of ships, and the seamen of every country, with the sense of responsibility resting upon them, declare themselves in favour of types of ships which are condemned by one or other of the antagonistic schools. Nevertheless, it has been only after long hesitation, and after the construction of a very large number of different types of ship that the naval authorities in most countries have decided on certain classes of ships, a combination of which is considered to-day indispensable for the constitution of a fleet.

These classes are those which figure in the programme brought forward by the Minister of Marine, and voted by the Chambers in 1900, viz., battle-ships, cruisers, destroyers, torpedo-boats, and submarines. It is necessary to examine with some attention the nature and fighting rôle of these different vessels.

The Armament of the Navy: Gun and Torpedo.—In the Navies of to-day there are only two weapons of real importance—the gun and the torpedo. As boarding is not likely to be attempted, cutlasses

and boarding-pikes will only be of use in special cases. Even the rifle is now only a very accessory weapon in the Navy, its place having been taken by the small quick-firing gun.

With regard to the use of the ram, which at one time was in high favour, it is at present generally considered as a weapon which may prove as dangerous to the ship using it as to the ship against which it may be employed.

Torpedoes can be carried and discharged equally as well by battle-ships and cruisers as by torpedo-boats and the smallest submarines. But if large ships are armed with torpedoes, they can only be considered as a weapon, auxiliary to the main armament, which can only be used should specially favourable circumstances arise, as, for example, when two ships may pass close to each other in action. If the torpedo were effective at long ranges, it would be a more formidable weapon, without doubt, than the gun, because it attacks the lower part of a ship, in which are situated the vitals. As it is scarcely possible to protect the bottom of a ship with armour, a double bottom, with cofferdams running round the inner skin, joined with a multiplication of the compartments into which the lower part of a ship is divided, is the only form of protection available against torpedoes. Thanks to these arrangements, it is generally admitted that a ship, properly constructed, could hardly be sunk by the successful explosion of a single torpedo against her bottom, and although she might be unable to move, she need not necessarily be *hors de combat*. But as torpedoes are only effective at, comparatively speaking, short ranges, it is preferable that vessels armed with them should be able to approach the enemy without being seen, and for this it is essential that they should be of small dimensions. But this condition alone is not sufficient. In the daytime, even the smallest vessel is easily discoverable from another standing higher out of the water than itself. The inevitable conclusion is, therefore, that a torpedo-vessel must be a fighting instrument of small dimensions, to be used essentially for night work.

In daylight, the torpedo-vessel can only act under certain conditions, when it can hope to more or less escape the observation of the enemy it wishes to attack. Such an opportunity might occur, for instance, during a *mêlée* between battle-ships, when the field of vision may be more or less obscured by smoke from the guns or from the ships' funnels, and the attention of those on board the battle-ships would probably be entirely concentrated on the movements of their immediate opponents, the excitement of battle rendering difficult a close observation of everything passing.

The characteristics of torpedo-vessels, which the nature of their weapon calls for, must, therefore, be as small a displacement as possible, and, as a general rule, as vessels adapted specially for the work of night attacks. An exception, however, must be made in the case of submarines, as their operations must take place during the day, because at night, in the present state of science, those on board would be unable to make anything out clearly after dark.

The gun can only be used to the best effect if the ship carrying it enjoys a certain stability of platform. If a ship rolls and pitches beyond a certain point, careful aiming becomes impossible, the fire is wanting in accuracy, and the projectile has a thousand chances of not striking the enemy. For a ship to preserve in a seaway the

TABLE 1.

Nature of Guns.	Weight of the Guns.	Weight of the Mountings.	Weight of the Projectiles.		Weight of the Charge (cartridge-case included).
			Steel.	Cast-Iron.	
30.5-cm. (12-inch), model 93-96, of 40 calibres	45,125 kilos. (44 tons 7.9 cwt.)	kilos. In turret, with 1 gun 26,500 (26 tons 3.6 cwt.) " 2 guns 50,800 (49 tons 10.74 cwt.)	340 kilos. (6 cwt. 7.5 lbs.)	292 kilos. (5 cwt. 8.5 lbs.)	111.5 kilos. (2 cwt. 22 lbs.), in 4 cartridges.
27.44-cm. (10.8-inch), model 93-96, of 40 calibres	35,040 kilos. (34 tons 9.53 cwt.)	In turret, with 1 gun 19,000 (18 tons 13.9 cwt.)	255 kilos. (5 cwt. 2 lbs.)	216 kilos. (4 cwt. 28 lbs.)	85.5 kilos. (1 cwt. 7.6 lbs.), in 3 cartridges.
24-cm. (9.4-inch), model 92-96, of 40 calibres	23,987 kilos. (23 tons 12 cwt.)	In turret, with 1 gun 12,500 (12 tons 6 cwt.)	170 kilos. (3 cwt. 3.9 lbs.)	144 kilos. (2 cwt. 3.5 lbs.)	66 kilos. (1 cwt. 3.3 lbs.), in 3 cartridges.
19.4-cm. (7.6-inch), model 92-96, of 40 calibres	12,700 kilos. (12 tons 9 cwt.)	In turret, with 1 gun 12,200 (12 tons 0.7 cwt.) " 2 guns 22,600 (22 tons 4.73 cwt.)	86 kilos. (1 cwt. 7.8 lbs.)	75 kilos. (1 cwt. 5.5 lbs.)	33.6 kilos. (74.05 lbs.), in 3 cartridges.
16.47-cm. (6.4-inch), model 92-96, of 45 calibres	8,200 kilos. (7 tons 8.18 cwt.)	{ In turret, with 1 gun 7,000 (6 tons 18.64 cwt.) " 2 guns 13,200 (12 tons 19.7 cwt.) Circulating P.C. Mount- ing R, 7,500 (7 tons 7.6 cwt.) }	52 kilos. (1 cwt. 2 lbs.)	45 kilos. (99.18 lbs.)	{ 35 kilos. (77.14 lbs.) in 1 case and 1 cartridge.
13.86-cm. (5.4-inch), model 1893	4,300 kilos. (4 tons 4.61 cwt.)	{ P.C. Mounting, mod. 93, 4,730 (4 tons 13.08 cwt.) Circulating P.C. Mount- ing R, model 93-97, 5,175 (5 tons 1.84 cwt.) }	35 kilos. (77.14 lbs.)	30 kilos. (66.12 lbs.)	18.3 kilos. (40.33 lbs.), in 1 case.
10-cm. (3.9-inch) model 1893	1,700 kilos. (1.718 cwt.)	{ P.C. Mounting, model 93, 3,000 (2 tons 19 cwt.) Circulating P.C. Mount- ing R, model 93, 2,740 (4 tons 10.53 cwt.) }	16 kilos. (35.26 lbs.)	14 kilos. (30.85 lbs.)	9.7 kilos. (21.37 lbs.), in 1 case.

necessary stability of platform, she must be of a certain displacement, with her lines carefully calculated, and her weights properly distributed; it has thus become necessary to build large and heavy ships, in order to ensure the necessary steadiness, with the resulting tendency to mount as many and as powerful guns as possible, and a merciless criticism is directed in these days against large ships carrying only a small number of guns, or guns of a small calibre. It is evidently contrary to common sense to go to enormous expense in constructing large modern ships, unless they are given an offensive power corresponding to their displacement and their cost.

Formerly, in the old days of wooden ships, the fighting value of a ship was calculated on the number of guns she carried, but in the present day the offensive power is calculated not so much on the number of guns mounted as on their power. The weight of modern guns, with their mountings and ammunition, has enormously increased, with a corresponding increase in the cost of manufacture, due to the increase in the length and calibre of guns, rendered necessary by the heavier projectiles, larger charges, and increased velocity required in the guns of to-day.

Table 1 shows the weight of the principal guns carried in ships, with the weight of the mountings, projectiles, and charges.

In addition, the powerful engines and boilers, which now have to be put into ships in order to ensure the high speed required in these days have also added proportionately to the cost of construction and the expense of maintenance of modern ships. The following tables will give some idea of what modern ships and their principal component parts cost:—

TABLE 2.

Designation.	"Charles-magne," battle-ship of 11,287 tons, 15 knots.	"Condé," armoured cruiser of 10,014 tons, 21 knots.	"Guichen," cruiser of 8,282 tons, 23 knots.	"Durandal," torpedo-boat destroyer of 308 tons, 26 knots.	"Cyclone," torpilleur de haute-mer of 150 tons, 30 knots.
	Francs.	Francs.	Francs.	Francs.	Francs.
Hull and its Accessories, Auxiliary Machinery and Armament Matériel ...	8,650,000 (£346,000)	8,412,000 (£336,480)	7,050,000 (£282,300)	747,000 (£29,880)	372,000 (£14,880)
Protection ...	9,800,000 (£392,000)	5,900,000 (£236,000)	950,000 (£38,000)	—	—
Offensive { Guns ...	3,260,000 (£130,400)	3,025,000 (£121,000)	910,000 (£36,400)	91,000 (£3,640)	20,000 (£800)
Power { Torpedoes ...	270,000 (£10,800)	345,000 (£13,800)	18,000 (£720)	66,000 (£2,640)	68,000 (£2,720)
Engines and Boilers ...	3,275,000 (£131,000)	3,880,000 (£155,200)	5,600,000 (£224,000)	742,000 (£29,680)	491,000 (£19,640)
Total cost of ship ...	25,255,000 (£1,010,200)	21,562,000 (£862,480)	14,528,000 (£581,120)	1,646,000 (£65,840)	951,000 (£38,040)

Estimate for the large Ships of the 1900 Programme.

Designation.	"République," first-class battle-ship of 14,865 tons, 18 knots.		"Léon Gambetta," first-class armoured cruiser of 12,550 tons, 22 knots.	
	Francs.	£	Francs.	£
Hull and its Accessories, Auxiliary Machinery and Armament Matériel	10,260,000	= (410,400)	10,882,000	= (435,280)
Protection... ..	15,130,000	(605,200)	8,199,500	(327,980)
Offensive { Guns	6,135,000	(245,400)	3,969,800	(158,792)
Power { Torpedoes	343,000	(13,720)	343,000	(13,720)
Engines and Boilers	3,674,000	(146,960)	5,800,000	(232,000)
Total cost of ship	35,542,000	= (1,421,680)	29,194,300	= (1,167,772)

Protection is the logical consequence of the Power of Guns.—In the nature of things it is impossible that pains should not be taken to protect, as far as practicable, ships carrying such a weight of artillery, and provided with such powerful propelling machinery, and costing the large sums that modern battle-ships do. The more guns they carry and the more powerful their engines, the more necessary is it to protect them against the enemy's projectiles. Field batteries are practically unprotected, but forts on which are mounted the most powerful siege artillery are protected with steel armour; and if it is necessary to protect forts, all the more so is it to protect ships, where a single bad injury might cause, in a few minutes, the loss of all the machinery, guns, and the *personnel* on board, and the millions of money they represent. Common sense, therefore, leads every Navy to protect its ships in proportion to the formidable nature of their armament and their cost. It was so in the old days of wooden sailing ships of the line and smooth-bore guns, when the planking of the sides was often four or five feet thick. In these days, when the armour is steel, it is only natural that its thickness and extent should be proportioned to the number and calibre of the guns, the size and power of the propelling machinery, the monetary value of the ship, and the numbers of her officers and crew. Thus we have seen the protection of ships by armour increase, in its development, with the progress made by the guns.

Offensive power and protection would thus appear to be two inseparable qualities, indissolubly associated the one with the other, and the development of which in a ship ought to be correlative. The greater the offensive power of a ship, the more extensive and better ought her protection to be.

Offensive power and protection are not of themselves sufficient; there are two other qualities necessary in ships of war, viz., *speed* and *radius of action*.

Necessity of Speed and large Radius of Action.—Superiority in speed has always been considered as of the first importance for fleets, on account of the undoubted advantages which it confers on ships which

possess it. The fleet possessing the superiority in speed can, in effect, choose the time and place for battle which suit it best. In the old sailing days, it permitted a fleet to take up the weather gauge or a leeward position, as its commander chose; in these days of steam, superiority in speed will equally enable it to take up and keep the most advantageous position, whether for range, avoidance of smoke, or for signalling purposes.

The superiority in radius of action is not less useful for all ships of war than that of speed, as it is self-evident it will enable them to keep the sea for a longer time without re-coaling—an advantage which is of the first importance, whether for purposes of chasing an enemy or to avoid one.

Speed and radius of action are two qualities correlative the one to the other, as offensive power is to protection.

The Qualities of Ships are represented by their Weights and Displacements.—Offensive power, protection, speed, radius of action, are expressed on board ships by weights and volumes, which increase in proportion as the attempt is made to obtain each of them in a greater degree.

Protection is represented by the weight of the armour more or less thick and capable of resistance which protects all the vital parts of the ship, her armament, and those who command her, etc., and which has to be proportioned to the penetrating power and explosive force of the projectiles to which it will be exposed.¹

The offensive power is represented by the weights of the guns, carriages and ammunition, weights which increase considerably as the guns become more powerful and have a more rapid fire.²

¹ The weights represented by the armour on battle-ships and modern cruisers are considerable, as the following details will show:—"Charlemagne" class of 11,267 tons, protection is represented by 3,300 tons of armour, etc., and constitutes nearly three-tenths of the total displacement of the ship; in the first-class armoured cruiser "Pothuau" of 5,459 tons, the weight of the protective armour is 1,086 tons, representing nearly two-tenths of the total displacement; in the first-class protected cruiser "Guichen" of 8,070 tons, the protective armour only weighs 522 tons, and presents only six per cent of the total displacement.

In the new first-class battle-ship "République" and her sisters, of 14,865 tons, of the 1900 programme, the weight of the protection is 5,265 tons, representing nearly thirty-seven per cent. of the total displacement; whilst in the new armoured first-class cruiser "Léon Gambetta" and her sisters, of 12,550 tons, also of the 1900 programme, the weight of the protection is only 3,257 tons, representing twenty-five per cent. of the total displacement.

² In the "Charlemagne" class, the weight of the guns, mountings, ammunition, etc., amounts to 1,078 tons, representing nearly a tenth of the total displacement; in the "Pothuau" it amounts to 415 tons, or seven per cent. of the total displacement; in the "Guichen" to only 266 tons, or three per cent. of the total displacement, which is the smallest offensive proportion in any of the French modern ships, as in the destroyers, it amounts to six per cent, and even in torpedo-boats to four per cent.

Speed is represented by the weight and size of the boilers and machinery; but the weight of these increases very considerably in proportion as one wishes to obtain a very high speed.¹

The sphere of action is represented by the weight and amount of coal a ship carries, consideration being had not only to her draught at the time of her trials, but also when she has on board the extreme amount of her supply. The supply of coal, and consequently its weight and volume, ought to be as large as possible the higher the speed required, as beyond a certain limit, in order to obtain extra knots in speed, the coal consumption increases very rapidly. For example, in order to steam 20 knots most ships have to expend not double the amount of coal required to steam 10 knots, but six or seven times the amount.²

Each of the principal qualities of a ship depends, as one sees therefore, on organs or material, the weight of which, more or less considerable, absorbs a part of the total displacement. From which it results naturally that the more we wish to develop any one quality, the greater must be the proportion of displacement allowed to it. The *maximum* possible of tonnage will therefore be reached if one wishes to obtain each of the qualities in the *maximum* degree that science permits to give it at a given moment.

However, there is a maximum limit to the tonnage of ships, imposed by the size and depths of harbours, and the handiness of the ships themselves. As a matter of fact, the limit of tonnage imposed by these conditions would seem to be from 15,000 to 16,000 tons. Above this limit of tonnage a ship will not be sufficiently handy to carry out all that is expected of her. A number of harbours will be closed to her, and it would be necessary to construct special

¹ In the "Charlemagne" class, the weight of engines, boilers, and normal coal supply is 1,976 tons, or nearly two-tenths of total displacement; in the "Pothuau" the weight is 1,576 tons, or nearly three-tenths of total displacement; in the "Guichen" the weight is 3,372 tons, representing nearly four-tenths of the total displacement; in the torpedo-boat destroyer "Durandal" of 332 tons, the weight is 177 tons, representing more than five-tenths of the total displacement, and for the torpedo-boats the proportion is almost the same.

² The following details will give some idea as to the enormous increase in the consumption of coal required to pass from a medium to a high rate of speed:—The first-class battle-ship "Bouvet" of 12,200 tons displacement, with engines developing at full speed 14,000-I.H.P., consumes 2.5 tons of coal per hour at 10 knots speed; 4.2 tons at 13 knots; 8.5 tons at a speed of 15 knots; and 12.5 tons at a speed of 17 knots. The "Gaulois," a somewhat newer ship of 11,268 tons displacement, with engines developing 14,500-I.H.P. at full speed, consumes 2 tons per hour at 10 knots and 14 tons at 18 knots. The "Dupuy-de-Lôme," the oldest of our armoured cruisers, with a displacement of 6,406 tons, and engines developing 13,000-I.H.P. at full speed, consumes 1.6 tons of coal per hour at a speed of 10 knots; 6 tons at a speed of 16 knots, and 12.5 tons at a speed of 19.5 knots. The small protected cruiser "Troude," with a displacement of 2,026 tons and engines developing a maximum of 5,800-I.H.P., consumes 900 k.g. (1,983.6 lbs.) per hour at 10 knots, and 9.5 tons at 20 knots.

TABLE 3.

Name of the Parts.	"CHARLEMAGNE," battle-ship.		"CONDÉ," Armoured cruiser.		"GUICHEN," cruiser.		"DURANDAL," Torpedo-boat destroyer.		"CYCLOPE," torpilleur de haute-mer.	
	Total weight W. D = 11,267.	Ratio of the total weight to the displacement D.	Total weight W. D = 10,000.	Ratio of the total weight to the displacement D.	Total weight W. D = 8,070.	Ratio of the total weight to the displacement D.	Total weight W. D = 332.	Ratio of the total weight to the displacement D.	Total weight W. D = 156.	Ratio of the total weight to the displacement D.
Hull and its accessories, boats, masts, and various objects	Tons. 4,241	0.376	Tons. 3,590.84	0.359	Tons. 3,427.01	0.424	Tons. 92.289	0.278	Tons. 41.543	0.266
Various auxiliary machinery	417	0.037	164.85	0.016	119.54	0.015	2.42	0.007	1.87	0.012
Offensive power	1,078	0.085	633.32	0.063	266.37	0.033	21.73	0.065	6.71	0.043
Protection	3,300	0.292	2,556.75	0.255	522.28	0.068	—	—	—	—
Speed and Radius { normal of Action with { full amount coal ... { that can be carried ...	1,976	0.175	2,183.56	0.218	3,372.65	0.418	177.14	0.533	92.33	0.591
	2,262	0.201	2,803.56	0.280	3,444.25	0.426	—	—	99.71	0.638

accommodation at the dockyards, which does not at present exist. Difficult to handle in themselves, they will be still more so when attached to a squadron, more or less large, where the ships have to manœuvre together. It does not seem therefore in the present state of naval science to be worth while to construct ships of a greater displacement than 15,000 to 16,000 tons.

Certain countries such as Germany and Russia are even compelled to construct ships of a less displacement, on account of the nature of their harbours and coasts.

The impossibility of exceeding, practically and usefully, a certain tonnage, compels all Navies to limit the weights, which correspond to each of the primordial qualities indicated above, whether they impose a restriction on all the qualities simultaneously or sacrifice some in favour of others. We have given in the accompanying table the value of the weights and the proportion of total displacement attributed to each of the four primordial qualities in each of the principal classes of our ships in commission.

Distribution of Weights between the Qualities of Ships.—In the distribution of weights which respond to each of the four primordial qualities, offensive force, protection, speed, and radius of action, it is necessary, in order to avoid wrong conclusions, to keep in mind the principles we have already laid down, and not to forget, for example, that offensive power and protection ought to go hand-in-hand, as should speed and radius of action.

Consequently if we wish to have very great offensive power we must have an equivalent amount of protection. Similarly, if we wish, above all, high speed, we must attach equal importance to the radius of action. To construct a ship with a powerful armament, which is not at the same time strongly protected, is to violate the most elementary principles of logic, because she will be exposed to the chance of having to succumb to the attack of another vessel less powerfully armed but better protected. On the other hand, a very fast ship with only a limited sphere of action will be still more irrational, as the faster she goes the less can she venture far from her coal supply.

It results then, that if we decide to give great offensive power and corresponding protection, if we are to keep within the assigned limits of displacement, we must reduce proportionately the weights, which represent speed and radius of action. *Per contra*, if we increase the speed and radius of action we must sacrifice somewhat the offensive power and protection. In either case we shall be acting in the construction of our ships conformably to principles established by experience and reason.

The natural consequence of the conditions enumerated above has been that in all Navies there are now being constructed two classes of large ships, which are distinguished, the one by the predominance given to offensive power and protection, the other by high speed and a considerable radius of action, qualities not less indissolubly united the one to the other, as on the other hand are the offensive power and protection.

Battle-ships of the line form the first of these two classes, cruisers constitute the second. The following table shows the distribution

of weights and displacements in the battle-ships of 14,865 tons, and the armoured-cruiser of 12,550 tons, which figure in the 1900 programme voted by the Chamber.

TABLE 4.

	Battle-ship of 14,865 tons.		Armoured Cruiser of 12,550 tons.		
	W.	$\frac{W}{D.}$	W.	$\frac{W}{D.}$	
	Tons.		Tons.		
Displacement	14,870.22	—	12,550.89	—	
Hull and its accessories, boats, masts, anchors, and various objects ... }	4,555.66	0.306	4,177.38	0.332	
Various Auxiliary Machinery ...	181.35	0.012	167.81	0.013	
Offensive Power (Guns without pro- tection, and Torpedoes)	1,685.72	0.113	1,094.52	0.087	
Defensive Power (Protection of Hull and Guns)	5,625.22	0.378	3,257.25	0.259	
Speed and Radius of Action	With normal coal supply	2,247.05	0.151	3,310.00	0.263
(Engines and Boilers, Coal and Petroleum)	With full amount which can be carried.	3,283.15	0.220	4,189.00	0.333
Crew, Provisions, and Water ...	273.75	0.018	256.55	0.020	

(To be continued.)

RIFLE SHOOTING AS A WINTER EVENING PURSUIT.

By Major-General C. E. LUARD (late R.E.).

Wednesday, 10th June, 1903.

General Sir ARTHUR POWER PALMER, G.C.B., G.C.I.E., Indian Army,
in the Chair.

LAST year the Council of this Institution kindly accepted my offer to deliver a lecture on this subject, but owing to my absence from England at the time fixed for the lecture, I was unable to deliver it. The Council has now done me the honour to request me to carry out my original intention, and the time which has elapsed has enabled me to place at your disposal some additional facts which strengthen the case of the advantages of utilising in rifle shooting a time of day which had hitherto been not merely neglected, but, I think I may also say, despised. If you come to consider what a large proportion of the population of this country is engaged in town work, you will readily recognise that the conditions of public life are so different to those of the great majority of people living in Austria, Switzerland, etc., that comparisons between the practices in those countries and ours are very apt to be misleading. I refer to this point, as, though we know very well how consistently rifle shooting has been cultivated for a long time in those countries, I think we have had these examples brought to our notice with a greater disregard of the respective circumstances of the inhabitants of those countries and of ours, than has been altogether fair.

And yet, how necessary it is to keep ever present before the minds of a teeming population, engrossed, perhaps too much so, in the acquisition of wealth, the absolute necessity for them, as a people, to be able to rely, when engaged in disputes with other nations, not on the chances of the fruits of their labours being secured to them by the arbitration of some foreigner, but by the strength that should exist in their own right arms. And so it came about that during the Boer war, the establishment of rifle clubs came very prominently before many people, and though the Secretary of State for War of the time cannot be said to have given this movement the encouragement that had been hoped, the efforts in that direction have never slackened, and several hundred rifle clubs of different kinds, with a large aggregate membership, have been formed in various ways with fairly good results.

But what has been done is but a drop in the ocean to what should be done, and can be done, to further a revolution in the minds

of the people who earn wages, and to stimulate them to learn the most efficacious way in which they may, to some extent, guard against the chances of national disaster and disgrace.

If you come to consider the expense that attaches to rifle shooting of the type generally adopted, the journeys from the towns to the ranges, the loss of time, and sometimes loss of wage, entailed by those journeys in the day time, the cost of the ammunition, repairs to ranges, and payment to instructional staff, etc., etc., it comes heavy enough, and often too heavy even for the enrolled Volunteer, with all the promptings of patriotism to encourage him, supplemented by the aid that is now afforded by the Government. It is manifest, therefore, that without some form of compulsion, generated by the Government, who would have to pay the expenses, accompanied also by such inspection as shall ensure a *quid pro quo* for the expenditure of State funds, the numbers of those who learn to shoot at all must be relatively small to those who, by any possible means, short of actual compulsion, should be enabled to acquire some knowledge of the art of rifle shooting.

Now half a loaf is better than no bread, and it therefore seemed very desirable to try if, at all events, firstly, an elementary knowledge of the art could not, without actual compulsion, be inculcated and practised by a great number of people, both men and lads, who for one reason or another could not or would not join the Volunteers, and secondly, whether others might not also be benefited. And that is how it came about that some of us decided to recommend for such a purpose, and for such persons, the time of day which is most available for so many of those who earn wages, *i.e.*, the evenings, and especially the winter evenings.

It may fairly be assumed that there is no one in this room, and no one who will take the trouble to read this paper, who does not know something about rifle shooting; but that there are very few who have ever shot except by daylight. What I have to bring before you this afternoon is consequently the best mode of learning how to carry on, to the greatest advantage, this kind of shooting.

There is one peculiar obstacle to progress which is not, perhaps, much recognised, and it is this, that whilst so many of those who are expected in most things to be leaders of men have their chief meal at night, and dislike any interference with it and with the time which succeeds that meal, the great mass of persons who should mainly be encouraged to learn to shoot do not, in this respect, come sufficiently into contact with those who should lead them. And, say what you will, I believe that the masses work to greater public advantage if they work *with* people of a higher social status than if they get it into their head that they are working *for* them.

There is probably nothing that anyone can subscribe to which is likely to give a better indirect return than a well-managed rifle club; but many think that, having given a little money, they have done all that is needed. Now, whilst in many cases, especially with the other sex, it is improbable that anything more useful could be done than subscribing money, there must be an enormous number of cases where personal contact between those who can afford to subscribe to the cost of evening shooting, and those who can or will only shoot in the evening, is not only quite possible, but would entail no greater expenditure of time than could be given easily enough without

much self-sacrifice. Of course there are innumerable examples where this is constantly being done, and I merely allude to this point to give all honour to those who are habitually acting in this manner, and to induce others to follow their example.

Just think of the enormous number of men and lads in our towns, and also in our villages, who, unless they have adopted some form of military service, really never have had, until recently, any chance of knowing anything whatever about rifle shooting, and in whom, from one cause or another, the inclination to learn and practise it is non-existent. Those who know me know well what I have done, in the course of a fairly busy life, for cricket and other forms of recreation at Portsmouth and elsewhere, and that I should be the last person to decry such kinds of sport; but I hold that it is our duty to do all in our power to remove from rifle shooting, so far as we can, the character of work of an irksome character, and convert it into a pastime, one of the most useful of all pastimes that a nation can profitably pursue.

Rightly, or wrongly, we are a people devoted to games, and therefore, to act in accordance with that inclination, this elementary rifle shooting must, by any means, be brought into the category of national games.

SHOOTING HALLS.

There are, of course, many places where no suitable structure may exist for this class of rifle shooting; but no great length of room, hall, or gallery is requisite for the elementary instruction which can be imparted, and in which a partial knowledge of the art of shooting may be gained. A range of from 40 to 60 feet is quite sufficient for such a purpose, and is, in fact, more useful than longer ranges, because these very short ranges economise both money and time, and it requires as good a hand and eye to hit a small bull's-eye at 50 feet as a larger one at 50 yards.

AMMUNITION.

The very first consideration is: what ammunition is most appropriate for such a purpose, because, if every shot is fired with proper care, perfection in shooting depends far more upon the *quantity* of shooting a man or lad can get, than upon anything else; for, after making allowance for the difference in physical qualifications between individuals, those who shoot the most will shoot the best.

The essence of this pastime, as of all others, is competition, either individually, or, better still, by combinations of persons, and, to effect this, it is most desirable to adopt arrangements which shall secure a fair uniformity in practice, so that competitions, when they take place, either in public or in private, shall be conducted under similar conditions to those usually practised.

We believe that the best ammunition for such a purpose which is at present manufactured has a bullet .22 of an inch in diameter, loaded into cases of various lengths, of which the kind known as ".22 short" contain sufficient powder for very accurate shooting at such a range as above indicated, whilst the longer, but more expensive, cartridges of the same character are, as a rule, more

accurate at longer ranges. These cartridges are made by many persons, both in this country and others, and are loaded either with black powder, or some composition of a smokeless or semi-smokeless character, the former being, as a rule, less expensive, but fouling the rifles more, whilst with the latter the advantage of the absence of smoke in a hall is considerable, and the noise is very much less.

The fouling of the bores of very small rifle barrels is a most serious matter, for when the little grooves get filled with fouling, the barrels are practically smooth bores, and to such an extent does this affect the shooting that even at 40-foot range I have known bullets strike the target with their sides in place of their points, and, of course, in such a case, no reliance can be placed on their accuracy, and the matches are spoiled. Besides that, though it would seem a minor matter, people dislike messing their hands about with the fouling, and having to be constantly cleaning their rifles.

In rapid shooting competitions, the absence of smoke is also most important. Consequently, although it is considered by some people that the black powder cartridges are more uniform in their results, and in some cases, perhaps, shoot stronger than the smokeless, yet on the whole it is found that the members of our clubs prefer for this short range evening shooting to pay a trifle more and have less smoke and dirt. The difference in noise is also not to be minimised, for you must not be a real nuisance to your neighbour, and rifle shooting can be carried on in many places with smokeless cartridges where complaints would be sure to follow if you shot with black powder.

As regards cost of ammunition, it, of course, varies from time to time, but it may be taken that from ten to thirteen shillings per thousand rounds for .22 short is a fair price, being about one-eighth of a penny per shot. Now the price at fairs is generally a penny a shot, or nearly so, for a very poor sort of shooting, but as you will see at fairs how well the shooting galleries are generally patronised, it gives one much encouragement to believe that, with better conditions all round, the establishment of this kind of work as a popular pastime is—to use a hackneyed phrase—very well within the range of practical politics. In many of these small rifle clubs a farthing a shot is the price charged, which leaves a margin of about 100 per cent. profit for club expenses, and no doubt in many cases the youngsters, and the less well-to-do, often get free shots given them by others. In the little club in my own village at Ightham, the club funds stand 8 shots free every night the club is open for shooting, to lads under the age of 16, and, if time admits, and they can afford it, they can have more shooting at their own cost.

Then there is the well-known Morris tube ammunition, very much favoured by those who possess or desire to use "Regulation" rifles as their weapons, and it is made both short and long, and also with black or with smokeless powder, the prices varying accordingly. But it is a good deal more expensive than that previously described, and it may be taken broadly that, for the same money, you can fire three shots with the .22 short, as against two shots with the Morris tube ammunition, a very important fact. There is also the ammunition used in Regulation rifles with "adapters," which compares much the same as regards cost of shooting.

Whether it is worth while to use rifles for this elementary shooting, which must be loaded with the more expensive cartridges, is a matter which has been much debated. Personally, I do not think it is, so I will now proceed to lay before you a few points connected with rifles.

Until quite recently it was generally considered sufficient to teach a man to hit a stationary object, and that it was immaterial how long he might take in aiming at it; but the highest form of the art of shooting is to know how to hit a moving object, and, to do so, you must learn to shoot quickly. Can this be inculcated to an appreciable extent in the elementary stages of shooting? The answer is, "Yes!" First of all, it can, in some small measure, be taught at those short ranges with Regulation rifles fitted with Morris tubes or adapters, and also with any other single loading rifle of very small bore; but I am satisfied that our best educational tool is a magazine, or, as it is sometimes called, a repeating rifle. Whilst with either class of tool, single loader or repeater, you can put a man or lad through the first stage, *i.e.*, stationary target work, and, when he has become fairly proficient at that, advance him to practise at a disappearing target, and, after that, teach him the final stage of rapid firing at a moving target, he has with the repeating rifle the very great advantage of never having to take his eye off the target, nor to remove the rifle from his shoulder, until he has fired the necessary number of shots. And when it comes to competitions for really rapid shooting, combined with accuracy, the scores made by those who have learned to use a miniature repeating rifle are so distinctly higher than those made by men and lads who are only capable of using a single loader, such as the Morris tube, that it is hardly fair to put them in the same competition, under the conditions which are best for rapid shooting.

Having enjoyed no small amount of experience in killing game with rifles, I am quite satisfied that people are more likely to become really good military shots if taught in the first instance with a miniature repeating rifle, than with any single loader. Magazine fire can be controlled, but must be taught.

The difficulty at present is to find men capable and willing to teach others how to use these repeating rifles, for their action is different from that of Regulation magazine rifles, their introduction for such a purpose is of quite recent date, they cannot at present be made in England at the price at which they can be imported from America, and I think there is an idea that they are dangerous.

But we have not found that, if ordinary common-sense rules are strictly adhered to, the chance of accident is appreciably greater than with single loading rifles, and, as a matter of fact, a very large amount of shooting with these small repeating rifles of .22 bore has been going on for some time in halls and galleries without (so far as I know) anyone having been seriously injured. We may, therefore, dismiss the idea of their being exceptionally dangerous tools to use for this class of elementary shooting.

As regards cost and weight, they are slightly more expensive and rather heavier than most of the many kinds of single loading .22 bore rifles, but a great deal less expensive and rather lighter than that of a Regulation rifle with a Morris tube fitted into it.

I think there is still room for improvement in this class of rifle for some ingenious inventor, who can devise a rifle at a moderate

price with a magazine arrangement more nearly approaching that of a Service weapon, but we can get on very well in the meantime with what we have now, and the description of repeating rifle which appears to be most generally approved is the Winchester, which is chambered to different lengths for the various lengths of cartridges.

For this evening shooting, the winter is the best time of year, for there are many other attractions in the longer days, and if a man or lad has shot steadily once a week or so through a winter season, he will have become fairly proficient, and either his funds, or those of the club to which he belongs, will generally have been sufficiently drawn on to make it hardly worth while to continue this indoor practice throughout the summer. The place where they shoot should, of course, be capable of being made warm, and provided with comfortable seats for spectators. The lights have to be specially arranged, those at one end of a hall being well over the sights of the rifles, and should not light one side of a sight more than another, whilst at the other end the targets must be as well lighted as possible, the lights at that end being screened from the view of the shooter. There must also be no intermediate lights at night through the length of a hall or gallery.

If a hall is specially erected for this purpose, skylights for day shooting should be provided at each end, in the positions just indicated, and the seats should be arranged behind or at the side of the shooters.

With respect to the mode of carrying on the shooting, I trust that I may not be accused of unduly advertising this afternoon the range that you now see in this hall, simply because I happened to invent it, for I think that much credit attaches to the man who improved on the original invention, Mr. H. Marks, the secretary of the Society of Miniature Rifle Clubs, which specially advocates this description of rifle shooting, and to which you, Sir, and many other distinguished gentlemen, have given your highly valued support.

It will be noticed firstly that all the marking is done from the firing end, so that exceptional safety is secured; secondly, the cards are the record of the score, so that disputes on that head cannot easily arise; thirdly, that it is available for all classes of shooting; and fourthly, that it is very portable. It can either be placed on standards on the floor, or it and the wheel at the firing end can be attached to brackets on a wall, just as may be found in certain cases to be most convenient. The timing of the shooting for disappearing or moving targets is best arranged by the use of a metronome, placed close to the man who turns the wheel, as, while he keeps his eye on the targets, and his hand on the wheel, the exactness of time is communicated to his ear by the loud tick of the pendulum on the metronome. For securing uniformity of conditions in rapid-firing competitions this little instrument is most valuable. In shooting at these very short ranges, the standing position is generally adopted, but if it be desired to fire from the kneeling or prone positions, it is an easy matter to provide little stools, about 1 foot by 1 foot 9 inches, the top of which should be 3 or 4 inches above the floor. In kneeling, the left foot, or, in lying, both elbows, would rest on the stool, and the necessary elevation is thus obtained.

Anyone who happened to go this spring to the Crystal Palace meeting for miniature rifle shooting, held in the Centre

Transept at that place, by leave and with the greatest possible assistance from the Directors of the Palace, would have seen these ranges at work, and I may add that so well satisfied was that keen rifleman, Sir Ian Hamilton, with their utility that he willingly stood godfather to the system by authorising me to describe it in future as the "Ian Hamilton" range. That meeting (for which there were over two thousand entries) very fully exemplified what could be done with thoroughly organised indoor shooting; it was attended by a very large number of riflemen, including one, at all events, of the very best shots in the kingdom, and teams and individuals from a large number of rifle clubs.

There are a great many places where this description of rifle shooting has now been introduced under the auspices of the above-mentioned society (whose office is at 17, Victoria Street, Westminster), and I may here allude to the great success which has attended the exertions of the Vice-Chairman of our Committee, Lieut-General Lance, C.B., a member of the Borough Council of Wandsworth, in inducing the council of that borough, and possibly of other boroughs in London, to take up the matter with the necessary vigour.

If I have entered more into detail in these matters than has been compatible with your patience, I trust you will recognise that the enthusiastic and very hardworking gentlemen who form our Committee, and are doing so much to make this class of rifle shooting a success, would not have readily pardoned me for omitting matter which might stimulate others to assist them in this great work. We believe that it may prove to be of very great public benefit, and not unworthy of the most serious consideration from every statesman of the Empire. For we all know that you may lead a horse to the water, but it does not follow that it will drink; and it may be that in the future some plan, by which the Government of the day may make a special grant to County Councils for elementary education in rifle shooting, may prove more efficacious than these voluntary efforts which are now being put forth, and which I have attempted this afternoon to exhibit to you. But in the meantime, I might say that so simple and comparatively inexpensive are the arrangements required for this elementary rifle shooting, that no country gentleman's house, where the proprietor has sufficient wealth, and his poorer neighbours are sufficiently numerous, should remain unsupplied with the means which would enable them to participate to some extent in the great game in which the people of this country were so eminently proficient in the days of yore.

Lieut-General Sir J. HILLS-JOHNES, V.C., G.C.B., R.A.:—I think this paper is a most interesting one, and I trust it will bring recruits to the different rifle clubs in the various centres to which this publication will be sent. I think it would be a very good move if the paper was sent to the various County Councils for consideration. With reference to the last paragraph, which states that arrangements can be fitted up in any country gentleman's house where the proprietor is sufficiently wealthy, I would like to ask what is the cost of the machine, and what the arrangement at the back, which looks like slate, is made of?

Major-General LUARD:—It is made of Siemens' steel, and the society supplies the apparatus complete for £11.

Lieut.-General HILLS-JOHNS :—I hope in due time the County Councils will take up the question, but from my experience in Wales there is a good deal of opposition to the teaching of drill and rifle shooting. At first the authorities would have nothing to say to teaching drill, but they are beginning to give way, and a start has been made in some elementary schools. This is a good commencement, and I trust it will be followed up with a desire to learn how to shoot. I must say that this system is a simple and very good one for that object.

Lieut.-Colonel C. B. MAYNE, R.E. (Asst. Insp.-General of Fortifications):—There are one or two points which are of importance in considering the value of miniature ranges such as this. One, about which I feel very convinced after a considerable number of years' experience, is that firing at short ranges is the best. A man who is good at short-range firing will very easily pick up all that is necessary to be known for effective long-range firing in the field. This is of peculiar value now with our new long-range rifle, and the very great difficulty of finding ranges of sufficient length for long-range firing. Doubtless many of us here know that the Government are trying to provide, as far as they can, miniature ranges in every barracks in preference to the Morris Tube range, because, in spite of what General Luard has said, soldiers have to use the heavy rifle, and it is just as well that they should become accustomed to its use in preference to a strange, though small and handy rifle, which however may be best for this sort of shooting. In the miniature ranges that are being made in our barracks now, we are using the full-size cartridge, so that men may get accustomed to the recoil of the rifle, which is also another very important consideration. Another thing which has been rather a hobby of mine with regard to shooting is, that I consider good shooting is very largely dependent on the relation between the eye, the brain, and the hand. In that way miniature rifle shooting, on account of its cheapness and the large number of rounds which it enables a man to fire at a relatively small cost, gives ample training in bringing the eye, brain, and hand into rapid working connection. In the act of aimed firing a distinct time elapses between the instant when the eye aligns the sight on the objective and that at which the hand acts, and during that time the rifle has probably left the mark. By means of training a great deal can be done in shortening this interval of time, and there is less chance of the sight leaving the target before the trigger is pulled. There is one other point I should like to mention, namely, that I feel certain that if a jungle is depicted in connection with the targets it has a beneficial effect. Shooting galleries that have jungles always draw the largest number of people. There is something fascinating in seeing various kinds of game appearing and disappearing among grass and bushes. Having thus spoken in favour of a system like that which we have heard of to-day, and which I think should be encouraged by everyone, I would like, with your permission, to conclude with one word of warning. There is a sentence or two in this admirable lecture which might be taken by superficial readers to mean that shooting is everything. There is a book which was written by an officer, whose death has been a great loss to our Service—the late Colonel G. F. R. Henderson—on the life of Stonewall Jackson, a book which I consider is of peculiar value to a nation like ours. The publication of that book, I think, has really been a national service to those who read it and learn the lessons from it. One of the most important lessons which he impresses again and again throughout the book is, that mere shooting without battle discipline, the discipline of men working together, is practically useless. He quotes the Southerners, who are born shots, riders, and scouts, as well as everything else that you could wish for material of an army, but they had not received battle discipline. The result was that the men joined as individuals, marched as individuals, fought as individuals, and when they ran away they did so as individuals, because they were not trained to collective action. They were the same men that won the most magnificent victories later on, but they were at first absolutely lacking in that collective discipline which is so necessary for the winning of battles, as well as for offensive

operations. On many occasions it has been pointed out that when we are called upon to rise in this country for the defence of our own shores, certainly the wisest thing we can do is to adopt a defensive strategy. If we are going to do it we must adopt offensive strategy, and for that we want men who are accustomed to marching discipline and battle discipline, and not to mere individual fighting alone. So I hope that side by side with this association this question will be taken up, perhaps by another association which has been formed since I have been abroad, called the National Service League. These two associations working together might bring the scattered individual elements more in touch with one another, so as to acquire what is the necessary complement to skill in shooting, namely, the collective discipline which is so necessary for successful fighting and also for offensive operations.

Colonel A. A. SAUNDERS (late Royal Artillery):—In the first place, I should like to thank General Luard very much for the most interesting lecture he has given us. As a very humble representative of a small village miniature rifle club in Worcester-shire, I wish to bear testimony to the invaluable results which we have obtained from our young men and lads during the winter months from shooting in our village hall. We are in great luck in this small village of ours; it is more or less a model village. We have a beautiful village hall: we are affiliated to the Society which General Luard manages, and once a week, in spite of the chief meal taking place at an hour which is held to be more or less prohibitive to some people attending, we manage to get down to the hall, and there the lads and grown-up men take the very greatest interest in the shooting. We use this apparatus, and we give them five shots a penny—and they have a good many pennorths—and the men really do improve immensely in their shooting every week. Of course we have to give them prizes. The club gives them prizes once a month, and various individuals give them small prizes also. There is one thing that I thank the author for giving us a hint about. According to the rules of our club no one under the age of 16 may join. I propose to get that changed directly I go back, because General Luard says that in his village club all lads under 16 and over 14 (which is really the age you want to get at these boys) are given so many rounds, every time the club meets, free of charge to shoot, and if there is time afterwards they can have a few pennorths "on their own." A curious thing happened in our club, which immediately raised the question of the gun license. In the summer time we have what I believe is legally called a curtilage—that is, a yard outside the hall, with a range of about 30 yards. We can shoot by daylight at this time of the year, so that we are not entirely tied down to winter shooting. But I wanted to get rather a longer range, and I wished to go to an old quarry about a quarter of a mile off and shoot. The question of gun license immediately cropped up, and after a long delay we got a decision from the Board of Inland Revenue at Somerset House to say that the use of these miniature rifles in a dwelling house, or in its curtilage was permissible, but if went anywhere else we must take out gun licenses; so of course my visit to the quarry was no good, and we could not get our 50 yards range. However, we were referred to the National Rifle Association; we were told that if we were affiliated to them we should be let off the gun license. So we wrote to the National Rifle Association, and they would not look at us. They said: "No, you use repeating rifles; you must use the Service rifle." We did not quite see our way to do that, and so we had to drop the project for the present. The one effect that this miniature rifle range has had on us is that all the men and lads are very keen indeed now to have a proper rifle range out of doors and to use the real rifle. That range I got from the landlord, and the tenant also gave permission to use the range. Then, of course, a question arose about the expense of ammunition. I only mention these facts because this miniature rifle shooting leads the men and lads on to think of the real thing: it cultivates their taste for rifle shooting and they want to go further. They want to be taken out of leading strings. They say to me: "That is all very well, but it is no good now; we want

to get out into the open and have a 500 or 600 yards range." I got everything for them, and then came the question of the ammunition, the cost of which in this country is quite prohibitive, so far as the men themselves are concerned; it means that the presidents and vice-presidents and certain members have to pay for the whole of the ammunition. Men earning 1*l*s. a week cannot afford to pay for their ammunition for rifle shooting. Therefore, you come to a certain point in a country village where all the men can shoot uncommonly well, and they get a little tired of the miniature shooting, and want to go ahead and get out of doors. We have a constant supply of young men coming on, but there we have to stop. Of course we cannot send them up from the country to compete in the competitions at the Crystal Palace. By the time we have sent up a team from the middle of Worcestershire to the Crystal Palace it costs a good deal of money; but still this Working Men's Rifle Club Association with miniature ranges has done an immense amount of good, and I wish them all possible luck. I think what Colonel Mayne said about the drill is quite correct. It would be a good thing if we could combine drill in the school with the use of the rifle. We might possibly then instil into the boys at school some system of discipline and drill, and in addition put the rifle into their hands and give them some practice at shooting. That is a thing which we ought to try and develop in our country districts as much as possible. I have nothing more to say, except to thank General Luard for his most interesting lecture.

Lieut.-Colonel E. GUNTER, *p.s.c.* (late East Lancashire Regiment):—I think everyone interested in national defence—and who is not interested in it?—must feel indebted to the lecturer for bringing to the notice of this Institution this excellent society—The Working Men's Rifle Club. As he says, the idea has been taken up, and though slowly it is gradually making its way. A great many have been established in the metropolis and all over the kingdom. I have a little knowledge of one, and I will tell you how it works, as it may be of interest. It is connected with a firm of matchmakers, Messrs. R. Bell & Co., of Bromley-by-Bow. Their conditions are that each man pays an entrance fee of 1*s.* and also 1*d.* a week. I think if the Working Men's Rifle Club Society would put themselves in communication with great employers of labour in the metropolis and throughout the country, and bring their methods of working more thoroughly home to them, they would be doing a patriotic work. It is not only in great centres like London that the work would be most effectively done, but in every large town where there are large firms, such as the well-known firm of Huntley & Palmer's at Reading. It is a difficult matter, because as has been observed by Sir John Hills-Johnes, there is a feeling in some parts of the country against putting the rifle in the hands of people at all, because it is said to lead to militarism. But, after all, militarism or not, the country must be defended, and the best way to defend the country is to accustom the lads and boys of the country to the use of the rifle. With regard to the particular kind of rifle used, the National Rifle Association prefer using the Morris Tube with the Service rifle. That, of course, has a great many advantages, because it accustoms the young men—and I think it is chiefly by young men that these rifle clubs will be carried on in the future—to the use of a weapon akin to that which they would have to use on service, and it enables soldiers to compete with civilians. I think if they had the same rifle they would work together more. It is very important to get the civilian rifle clubs to work together with the soldiers. They do that in a very friendly manner now; they have constant matches between the two; they have at most barracks a Morris Tube rifle range, and matches are arranged. The lecturer has referred to the fact that a large number of people in Austria, Switzerland, Germany, etc., engage in rifle practice. It is rather a delicate point to touch on in England, but the fact that they get the young men in such large numbers in these countries is chiefly because they are allowed to shoot on Sundays. I do not know how it would be received in this country, but I can conceive no great harm in

allowing rifle clubs to be open on Sunday afternoons. I think it would be of benefit. If you go through any large town you see numbers of young fellows who do not know what in the world to do with themselves after their dinner, say at 1.30 p.m., on Sunday. They loaf about all over the place; as soon as they can get drink they get it, and they are absolutely at sea for want of something to do. I have no doubt that if facilities were offered, and if we could get over the prejudice of anything like a pastime, as it has been called, being indulged in on Sunday afternoons, that large numbers of these young men would make use of the miniature rifle ranges, with great advantage to themselves and to the country. With regard to what Colonel Mayne said about the necessity for discipline and working together, I am in thorough agreement. The Lads' Drill Association is doing everything it can to inculcate the forming of cadet corps and working lads cadet companies in schools, towns, and villages. The habit of working together can soon be taught. The lads take the greatest interest in it, and soon learn the elements of skirmishing, and how to work together for collective effort and discipline. I should like to ask the lecturer if he would kindly say how much it costs to establish a range such as he uses. He has been good enough to state what the apparatus exhibited costs. It would also be an advantage if he could tell us, roughly speaking, what the shed, which is usually about 50 feet long, costs as well.

Major-General C. E. LUARD:—It depends on the width. The sheds vary very considerably in cost from £100 to £350. A shed large enough to supply a large club for evening shooting would cost about £250, including everything. Several of these sheds and huts have been put up by a contractor, who quotes special prices to the society, and all information on that subject can be obtained from our secretary by correspondence. The sheds or huts vary very much in price in accordance with the width.

Lieut.-Colonel E. GUNTER:—While on the subject of apparatus, I should like to ask also whether the lecturer has tried in any way to imitate in the small miniature target a man throwing himself down and raising himself up again, because I think it can very easily be done. I do not know whether it is contemplated, but at present on the miniature target you only get the backward and forward movements.

Major-General C. E. LUARD:—We have tried that, but we find it better practice to adopt the present arrangement, because the targets that disappear up and down always come up at the same place; whilst, in this case, the targets, when they re-appear, stop at unknown spots.

Lieut.-Colonel E. GUNTER:—Lastly, I should like to ask the lecturer whether he thinks it possible for his society to approach the Morris Tube Company with a view to their supplying rifle clubs throughout the country with ammunition at a less price than they charge at present.

Major-General C. E. LUARD:—That will be taken into consideration.

Lieut.-Colonel O. T. DUKE (late 5th Bn. Rifle Brigade):—Three associations have been mentioned in this discussion: first, the very important association which has been represented by General Luard; secondly, the National Service League, about which Colonel Mayne enquired; and, thirdly, the Lads' Drill Association, which was referred to by Colonel Gunter. It seems to me that not one of those associations can work quite by itself; all three ought to work in harmony. It is not possible that the work which has been so admirably initiated, and so well carried out by General Luard, should be the beginning and end of rifle instruction for youths. A boy ought to be physically trained to handle and carry a rifle. When he has been made fit to use the weapon, then he ought to be taught to shoot; and there is not the slightest doubt that this very clever invention of General Luard's will be of the greatest possible use

throughout the country in teaching boys to shoot. Only the other day I met the gymnastic instructor in the York division. He said to me :—" You are getting on splendidly. All the private schools are giving their boys drill, and nearly everyone of them has started a miniature shooting range." He had gone round, as the military officer, inspecting those schools, had watched the shooting, and said it was highly satisfactory. Then we come to Colonel Mayne, who has, I think, contributed the most valuable arguments to this discussion that we have yet heard, namely, the vast importance of when you have taught your boy how to shoot giving him such education as will enable him to work with troops. That will be the work of the National Service League. If we of the Lads' Drill Association can arrange that every boy, in every elementary school, shall be physically trained, and that when he leaves that elementary school he shall join some body, either a cadet corps or a cadet company, or some local battalion for boys which could be got up under municipal control, where he could learn the elements of marching, shooting, and obeying orders, we shall have done a great deal. Then if the National Service League will take those boys whom we have so taught and compel them to undergo six months of thorough military training, and to use the service rifle and shoot at long ranges, we shall then have the whole of the young men of this country in such a condition that if we have to call upon them to furnish a very large contingent of armed men to meet an invasion, or even to go abroad, we shall have no poor results. Therefore, I maintain that General Luard, the National Service League, and ourselves, the Lads' Drill Association, ought to combine our efforts with the one great object of making the youths of the country fit to defend our shores.

Lieut.-Colonel J. W. ANDREWS, *p.s.c.* (late Devonshire Regiment) :—I should like to ask for a little further information. Some years ago my wife was interested in these matters, and she presented the Volunteers in a village near where I live with a Morris Tube arrangement. Unfortunately, it was quite an outlying part of the country. I went there in about a year's time to see how it was getting on, and I found the instructor had carried it off to the headquarters of the company to make more use of it. But that was not what my wife wanted, so we got it back again. My wife thought she would like to go a little further and establish something of this sort in the open air; but I do not know what length of range is required. We cannot get more than a very short distance on account of the country being cultivated. There is a gravel-pit near, but at the back of it there are fields and a public pathway. I should like to know whether, in using the Morris Tube ammunition, or the other ammunition mentioned by the lecturer, which is still cheaper, any great distance is required at the back of the range. With a range of 700 or 800 yards, I suppose you want 500 or 600 yards more at the back to make it quite safe?

Lieut.-Colonel E. GUNTER :—Might I add to what I said before, that, with regard to drilling lads at school, it is no use teaching them to shoot unless you teach them at the same time to judge distance. They take the greatest possible interest in that, and it is easily taught.

Major-General C. E. LUARD (late R.E.), in reply, said :—In answer to the different gentlemen who have been kind enough to discuss the subject of the lecture which I have had the honour of reading to you this afternoon, I am much astonished to find that there is such a very small amount of adverse criticism. Several most interesting points have been raised by the officers who have taken part in the discussion, especially by Colonel Mayne, who referred to the National Service League; by Colonel Duke, who also referred to the National Service League; and by the officer who spoke with regard to the Lads' Drill Association. There is, to a certain extent, an amalgamation between the Lads' Drill Association and our society, because Colonel Duke occupies the same room, whenever he feels disposed to take advantage of it, as that which our secretary and myself do in London, so that we can always discuss matters of that kind whenever we feel inclined. That is a very advantageous

kind of amalgamation, because we can always confer and arrange matters of that kind. It would be perfectly invidious to say which is the more important, rifle shooting or drill, because they are of equal importance in many respects, especially for the young. At the same time, however excellently a lad or man may drill, unless he is a good shot he is of little use; so that we rather want him to shoot first if possible, and then place him in the hands of the drill sergeant and teach him to manœuvre. That embraces what Colonel Mayne said about the value of collective discipline. It is very important, but at the same time you must remember this is a free country, and many people will learn to shoot who are not inclined to place themselves under the drill sergeant; and you cannot force them to do so, unless there is more compulsory legislation than exists at the present time. There is also a stronger inclination to learn to shoot than to drill. We are obliged to face these facts, because they are national facts, and we cannot get away from them, however much we may wish. With regard to the out-of-door ranges, Colonel Andrews mentioned the difficulty there was in connection with that subject; but I think if he will consult with the officer in his own particular district who is connected with rifle shooting, the District Musketry Inspector, I think he is called, he will obtain advice as to whether that particular spot to which he refers is safe for out-of-door shooting, and if not, what steps should be taken to make it safe. The point raised by Colonel Gunter about shooting on Sundays is a very important matter indeed. It is entirely a matter of popular sentiment. Popular sentiment in many places at the present time is opposed to Sunday shooting, and people do not like to fly in the face of popular sentiment. That is the only reason. But I may tell you this, that there are several rifle clubs that are connected with, and are part and parcel of, our association, who do shoot on Sunday afternoons in their halls. At Stoke Newington and other places they shoot regularly on Sunday afternoons. As a matter of fact, they do in many places shoot on Sunday afternoons, and disregard public sentiment in that district. If that can be done generally all over the country, if you can fly in the face of public sentiment and disregard it, there is no question that Sunday afternoon is a most appropriate time for carrying on rifle shooting. With regard to the cost of ammunition, we cannot put any pressure on the Morris Tube Company to sell their ammunition at a lower rate than they choose to charge; we should be very glad to do so if we could. I thank the gentlemen who have spoken very much indeed for the remarks they have made.¹

¹ As the hall of the Institution was required for other purposes, time did not admit of my replying more fully to the interesting points raised in this discussion; otherwise I should like to have said that I did not think as highly of "jungles" as Colonel Mayne seemed to do. Target shooting at cards with bull's-eyes and concentric rings, as carried out at the Crystal Palace, and in many of our clubs, is quite sufficiently interesting, and is more satisfactory in match shooting than any arrangement for shooting at figures of beasts in their haunts. Generally speaking, such arrangements, except in permanent shooting galleries, are scarcely practicable. Besides, the animal we seriously wish to train our people to be able to hit is a human enemy, and the only departure from the ordinary target that I would suggest is that which was exhibited on the range in the hall, viz., the figure of a rifleman on a card.

I should like to have said to Colonel Gunter that a good deal of useful elementary rifle shooting can be taught quite independently of teaching people the useful art of judging distances; also, that as it has recently been decided to teach soldiers of the Regular Army to shoot with full-sized ammunition only, Morris Tube matches between such soldiers and other persons will presumably be comparatively rare in future. I must somehow have misled Sir Power Palmer in his kind allusion to my sons, for their merits as good rifle shots are in no way due to the miniature range now on view. But I take the liberty, after mature deliberation, of

The CHAIRMAN (General Sir A. P. Palmer):—We have had a very interesting discussion. As very often happens in this hall, many of the gentlemen who join in these discussions grind their own axe. However, from the multiplicity of advice which we receive we can generally evolve something useful. The lecture this afternoon has established the advantage of promoting miniature rifle shooting; it has established the fact that a taste has been engendered for rifle shooting which is capable of further development, and that the lads who learn to shoot at miniature ranges desire to go further and shoot in the open. I have observed that when the Government get "stuck up" over any question they generally appoint a committee. I think it would be very advantageous if the gentlemen who have given us such valuable advice this afternoon could form themselves into a committee, with a selected president. If Colonel Mayne, Colonel Duke, Colonel Gunter, and Major-General Luard, with a selected president—probably an owner of land, or some influential country gentleman—could discuss what could be done in the way of developing the scheme suggested by Colonel Mayne, so as eventually to combine the very desirable quality of battle discipline with the instruction which is gone through first at the miniature ranges and afterwards at the Lads' Drill Association, we might go a step further, and so develop what has been begun under such auspicious circumstances into a very useful means for the defence of the Empire. I would now like to thank General Luard for his excellent lecture. The machine which he has invented may seem a toy; but we should judge everything by results, and I learn that it has had wonderful results in training men to shoot at big game. I understand that General Luard's own sons have sent him home some beautiful heads which they managed to get by good shooting learned at this miniature rifle range; so that really there is something in it. I wish it every success, and hope it will attain great proportions. It now remains for me to thank General Luard for the very able lecture he has delivered, and those gentlemen who have so kindly joined in the discussion.

Lieut.-Colonel O. T. DUKE:—You said, Sir, that it would be a very desirable thing if a committee were formed. A Departmental Committee of the Scottish Education Department and the English Education Department has just been formed to draw up a model course which shall be adopted throughout the country for the best physical training of the youth of the country. A Royal Commission is sitting in regard to the Militia and the Volunteers, and to that Commission is going to be referred the whole question of how best to develop the cadet movement of the country, so that the committee that you wished for is already in existence.

holding the view that a very considerable economy in the cost of ammunition would be effected, whilst a greater efficiency in rifle shooting would be obtained, if our soldiers, sailors, and the civil population were first trained, and afterwards to a great extent practised with inexpensive ammunition, such as the '22 short cartridges, fired out of repeating rifles; and with all due deference, I venture to predict that time will prove the correctness of this view, notwithstanding the adverse opinion which may be held at present on that point by people of eminence and expert knowledge.—C. E. L.

NAVAL NOTES.

HOME.—The following are the principal appointments which have been made: Admiral—Sir J. Fisher, G.C.B., to be Commander-in-Chief at Portsmouth. Captains—P. F. Tillard to "London"; J. R. Jellicoe, C.B., to "Drake"; S. E. Erskine to "Warrior"; F. L. Campbell to "Prince George"; A. C. Galloway to "Anson"; J. Startin to "Jupiter."

Admiral Sir C. Hotham, G.C.B., G.C.V.O., hoisted the Union at the main on board the "Victory" on 31st August, on promotion to Admiral of the Fleet; the flag was struck at sunset, and Admiral Sir John Fisher's flag, which had been hoisted in the morning on board the "Narcissus" on his assuming the command, was then transferred to the "Victory."

The new first-class battle-ship "Montagu" left on the 22nd ult. for the Mediterranean, where she has relieved the "Ramillies"; which ship arrived at Portsmouth on the 27th ult., where she will pay off. The first-class battle-ship "Goliath" arrived at Plymouth on the 29th ult. from China, and has proceeded to Chatham, where she will pay off. The second-class cruiser "Minerva" left Portland on the 26th ult. for Gibraltar, with the Antarctic relief ship "Terra Nova" in tow; she arrived at Gibraltar on the 31st ult., and the second-class cruiser "Vindictive" then took the "Terra Nova" in tow, and proceeded to Aden, where she arrived on the 14th inst., and will leave again immediately for Hobart.

The Naval Manœuvres.—The strategical manœuvres between the X fleet, under the command of Admiral Sir Compton Domville, and the two divisions of the B fleet, under the command of Sir A. Wilson, practically came to an end with the action between the two fleets in latitude 39° 40' N., and longitude 26° 27' W., about fifty miles to the North of Terceira, on the 9th August, the junction between the two divisions of the B fleet having been effected on the evening of the 8th. When the action took place, the strength of the X fleet was ten battle-ships and four cruisers, and of the B fleet, fourteen battle-ships and fourteen cruisers. The result cannot be known until the official report of the umpires is published. The combined fleets anchored in Lagos Bay on the 13th August.

Between the 14th and 16th inclusive, the combined fleet coaled, and tactical exercises were then carried out on the dates named, according to the following programme:—

Monday, 17th August.—At sea. "I.Z. 1." Vice-Admiral Lord Charles Beresford v. Rear-Admiral Custance.

Tuesday, 18th August.—Harbour. General exercise. Service-rig sailing races.

Wednesday, 19th August.—At sea. "P.Z. 2." Rear-Admiral Fawkes v. Rear-Admiral Walker.

Thursday, 20th August.—Harbour. General exercise. Private-rig sailing race.

Friday, 21st August, and Saturday, 22nd August.—At sea. "P.Z. 4." Admiral Domville v. Vice-Admiral Wilson.

Sunday, 23rd August.—Harbour.

Monday, 24th August.—At sea. "P.Z. 3." Rear-Admiral Poe v. Rear-Admiral Lambton.

Tuesday, 25th August.—Harbour.

Wednesday, 26th August.—At sea. Reduced fleets. Action between officers not in command:—Forenoon, Captain Winsloe v. Senior Captain Channel Fleet.

Launches.—All three battle-ships of the "King Edward VII." class, of the 1901 programme, have now been launched. The first to take the water was the "Commonwealth," launched by the Fairfield Company on May 13th, from their yard at Govan, on Clyde. Her first keel-plate was laid on June 17th, 1902, so the rate of her construction to the launching stage, viz., 10 months and 26 days, is highly creditable to the firm, especially as her launching weight, 8,000 tons, is greater than that of the few battle-ships which have been launched in a somewhat shorter time. On the 23rd July, the "King Edward VII." was launched at Devonport, the naming ceremony being performed by H.R.H. the Princess of Wales; and on the 25th ult., the "Dominion," the last of the trio, was launched from Messrs. Vickers' yard at Barrow-on-Furness, the naming ceremony being performed by H.R.H. Princess Louise, Duchess of Argyll.

The dimensions of these fine ships are as follows:—Length between perpendiculars, 425 feet; beam, 78 feet; with a draught of 26 feet 9 inches on a displacement of 16,350 tons.

There has been of recent years a steady development in the area of broadside protected with armour. Formerly, in the "Majestic" and "Canopus" class, the belt, while it had been increased in depth to 14 feet or 15 feet, was confined to the central part of the ship, extending to only 50 per cent. of the length; but in the three "Formidables" this length was made 216 feet out of the total of 400 feet, but at the ram there was 2-inch nickel steel, which, while it reinforced the stem structure, also added to the protection of the ship. In the later ships, including the "Queen," and "Prince of Wales," instead of being nickel steel, the belt is of specially hardened armour, and tapers from the 9 inches of the main belt to 4 inches, and finally to 2 inches up to the 35-ton ram. The armour may therefore be said to extend for fully 70 per cent. of the length of the ship, with a depth of 15 feet. In the "King Edward" class the depth has been increased to about 22 feet. Thus it will extend from 5 feet below the water-line to the upper deck level; and the 6-inch guns mounted on the main deck, instead of being within casemates, leaving the broadside between these deck structures unprotected, will be placed within the broadside armour, with traverses and splinter screens to isolate each gun. The thickness of the armour on the water-line will be 9 inches; the next strake will be 8 inches, and above that 7 inches, while at the forward end it will be reduced by easy steps to 2 inches. This will be a great improvement on the existing system, as the unarmoured skin-plating between the casemates cannot resist the penetration of high velocity shells, which could do considerable damage to the inboard plating of the casemates. In the "Queen" and later ships the increase in thickness of armour at the fore end of the citadel enables the 'thwartship armoured bulkhead forward to be dispensed with, the armoured deck being shelved and thickened; but at the after end of the citadel, where the side armour terminates, there is such a traverse of from 9 inches to 12 inches in thickness, reinforcing also the barbette armour, while abaft this again the protective deck is increased in thickness, and the shell at the water-line made of heavier plating. The armoured deck is of 2-inch steel on the curved portions, and of 1-inch thickness in the centre or flat parts, while the upper deck over the citadel is also of 1-inch steel.

The main armament will consist of four 12-inch and four 9·2-inch guns, while the secondary battery will consist of ten 6-inch Q.F. guns. The training and mechanism for the larger guns will be of the Vickers type, which confers the great advantage of enabling the gun to be re-loaded immediately after firing, at any angle or training, instead of bringing it back to the fore-and-aft position. In such case three 850-lb. projectiles have been fired from a 12-inch gun, and five 380-lb. shots from a 9·2-inch gun within 60 seconds. The Q.F. guns, instead of being in casemates, are within the broadside armour, which is sponsoned out at the gun positions, to enable the weapons to have a large arc of training forward and abaft the beam. The 12-inch guns are mounted in pairs forward and aft, in the barbettes, which are hooded and protected by 12-inch armour, and at the four corners of the citadel the four 9·2 guns are mounted singly, also in hooded barbettes protected by 4-inch armour, so placed as not to interfere with the broadside fire of the large guns. There are in addition ten 6-inch guns, in the casemated central battery, which is protected with 7-inch armour, fourteen 12-pounders, and fourteen 3-pounders, with four torpedo-tubes, all submerged.

In the "Dominion" and "Commonwealth" Babcock and Wilcox boilers are to be adopted, while in the "King Edward VII." there is a combination of one-fifth cylindrical with four-fifths of Babcock and Wilcox boilers. Here, again, comparison is possible with the Belleville system, for the new battleship machinery will be very similar to the engines of the six vessels of the "Duncan" class now being completed, in which Belleville boilers are used to get the same power of 18,000-I.H.P. from engines whose cylinders are of the same diameter as those in the new "King Edward VII." class. As to weight, the whole machinery with the Belleville boiler works out at 1,580 tons, while with the Babcock and Wilcox system the total becomes 1,735 tons, and with cylindrical boilers providing two-fifths of the power the total is 1,885 tons, or 300 tons more. It is scarcely necessary to labour the point that this extra weight involves forfeiture of some of the offensive or defensive qualities of the ship, or an increase in the weight and size of the ship to provide for the heavier boilers, and again for the extra material resulting from larger dimensions of hull. Here are the leading particulars of the three systems :—

Comparison of Boilers for 18,000-I.H.P. Battle-ship.

Type.	Belleville.	Babcock and Wilcox.	$\frac{3}{8}$ Babcock and Wilcox, $\frac{2}{8}$ Cylindrical.
Number	24	16	14 and 6
Steam pressure lbs.	300	270	210
Heat surface square feet	43,260	47,250	27,380 and —
Grate area "	1,375	1,400	817 and 486
Heating surface per I.H.P. ..	2·4	2·63	—
I.H.P. per grate area	13·1	10·4	—
Weight of machinery tons	1,580	1,735	1,885
I.H.P. per ton of machinery...	11·4	10·37	9·54

It will thus be seen that the I.H.P. per ton of machinery is, with the combination, 9·54-I.H.P., and with the Babcock and Wilcox 10·37-I.H.P., as compared with 11·4-I.H.P. in the case of the Belleville boilers. With the inclusion of the tank boiler in the steam generation system, a reduction of pressure has been made imperative—from 300 lbs. and 270 lbs. respectively with the purely water-

tube boiler arrangements to 210 lbs., and this, again, has rendered larger cylinders, etc., necessary. Thus, in the "Duncan" class and, again, in the two ships of the "King Edward VII." class, to have Babcock and Wilcox boilers the diameters are to be the same—33½ inches in the case of the high-pressure, 54½ inches in the intermediate, and 63 inches in the two low-pressure, while in the vessel with the double system of boilers the diameters are 38 inches, 60 inches, and 67 inches respectively, the stroke continuing the same—48 inches—and also the piston speed—960 feet for 120 revolutions.—Compiled from *Engineer* and *Engineering*.

The Re-organisation of the Coast-Guard.—It is officially announced that under the new arrangements for the organisation of coast-guard duties on shore it has been decided to sub-divide the coast line of the United Kingdom into districts on the following principle :—

England.—1. Eastern District : St. Abb's Head to Dover. 2. Southern District : Dover to Salcombe. 3. Western District : Salcombe to Tor's Point.

Scotland.—One District : Comprising the present Leith and Clyde Districts, including the Orkneys, Shetland, and Stornoway.

Ireland.—1. Northern District : Comprising the present districts of Lough Swilly and Kingstown. 2. Southern District : comprising the present Limerick district.

Each district will be under the orders of a district captain specially appointed, except in the case of the Southern District of Ireland, where the duties of district captain will be performed by the present captain of the "Æolus," who will be reappointed additional to that vessel for charge of the Irish Southern District, and as flag-captain to the rear-admiral at Queenstown. The district captain for the Northern District of Ireland will be appointed additional to the "Æolus;" and the district captains for England and Scotland will be appointed additional to the "President." The head-quarters of the district captains will be at Harwich, Southampton, Liverpool, Edinburgh, Kingstown, and Queenstown. Sea-going drill-ships of the "Apollo" class will be stationed at the following points :—Harwich, "Andromache"; Southampton, "Apollo"; Holyhead, "Spartan"; Firth of Forth, "Sappho"; Kingstown, "Melampus"; and Queenstown, "Æolus." The "Æolus" will cease to be flag-ship, but the rear-admiral commanding on the coast of Ireland, with his staff, etc., will remain on the "Æolus" books. The admiral's flag will be flown on shore at his official residence. The 8 torpedo-gunboats now employed on fishery and coastguard duties, and all coastguard cruisers, will become tenders to the sea-going drill-ships.

The South Atlantic, Cape of Good Hope, and the East Indies Stations.

—The new re-arrangement of the limits of the above naval stations came into effect from August 1st, 1903 :—

The West Coast of Africa Division, including the whole of the Portuguese possessions on that coast, has been separated from the Cape of Good Hope Station (which in future will be described by that abbreviated title), and combined with the present South-East Coast of America Station, under the title of the South Atlantic Station, with a rear-admiral or commodore in command.

Madagascar, Mauritius, Seychelles, and their Dependencies will be transferred from the East Indies to the Cape of Good Hope Station, the northern limit, in the Indian Ocean, of the latter station being extended so as to include these islands.

The limits of the Cape of Good Hope Station are now as follows :—

On the north :—In the Indian Ocean by the Equator between the coast of Africa and the meridian of 75° east, and by the parallel of 10° south latitude between the meridians of 75° and 95° east longitude.

In the Atlantic, by the parallel of the Cunene River about $17^{\circ} 15'$ south latitude between the coast of Africa and the meridian of Greenwich, and by the parallel of 15° south latitude between the meridians of Greenwich and by the parallel of 15° south latitude between the meridians of Greenwich and of 15° west longitude.

On the east, by the meridian of 75° east longitude between the Equator and the parallel of 10° south, and by the meridian of 95° east.

On the south, by the Antarctic Circle.

On the west, by the meridian of 15° west longitude.

"*Hyacinth*" and "*Minerva*" Trials.—A Blue Book [Cd. 1569] has been issued containing a report of the further trials which took place in February last of the cruisers "*Hyacinth*" and "*Minerva*." The report, which is signed by Rear-Admiral W. H. May, the Controller of the Navy, is mainly of a technical character, and is accompanied by diagrams illustrative of curves of speed and I.H.P. with other matters prepared for the information of the Boilers Committee. Considerable space in the report is devoted to the comparative trials made in April, 1902, in the "*Hyacinth*" with various types of propeller before the long-distance run of the two cruisers in February of this year. The vessels left Plymouth together at 10 a.m. on February 4th, they passed Gibraltar together at 11 p.m. on February 6th, and then steamed backwards and forwards along a set course off the coast of Spain until a specified quantity of coal remained on board each ship unburnt. The results of this trial were tabulated and appear in the report; their practical result goes to show that the speeds of the two vessels at 7,000-I.H.P. are practically identical. On February 15th, at 9 a.m., the cruisers being at anchor at Gibraltar, signal was made for them to proceed at full speed to Portsmouth. The "*Hyacinth*" got away in 26 minutes, the "*Minerva*" taking 38 minutes more before she could proceed. At 7.50 a.m. on February 16th the port engines of the "*Hyacinth*" broke down, and she proceeded to Plymouth at a speed of between 14 and 15 knots, arriving at that port on February 18th at 2.45 p.m. It was not until 2 hours after the accident that the "*Minerva*" caught up the other cruiser, and, passing her, went on to Portsmouth, where she arrived on February 18th at 1.33 a.m. Up to the time of the breakdown the "*Hyacinth*" was averaging about half a knot more than the "*Minerva*." No defects of consequence were discovered in the water-tube boilers of the "*Hyacinth*"; and, beyond a few leaks in her cylindrical boilers, no trouble was experienced with either the machinery or boilers of the "*Minerva*." The special reports of the Chief Inspector of Machinery who attended the trial of the "*Hyacinth*" and the Inspector of Machinery who was in the "*Minerva*" are given in appendices.—*Times* and *Naval and Military Record*.

AUSTRIA-HUNGARY.—*The Evolutionary Squadron*.—The manœuvre squadron was constituted on the 15th June for the summer manœuvres. The following appointments were made :—Rear-Admiral L. Kneissler von Maixdorf, with Frigate-Captain R. Ritter von Kohen as his Chief of the Staff, to command of squadron and the First or Battle-ship

Division; Linienschiffs-Kapitän J. Ritter Mauler von Elisenau to command of the 2nd or Light Division, with the rank of Commodore, his Chief of the Staff being Korvetten-Kapitän A. S. de la Cerda; Rear-Admiral L. Ritter von Jedina, with Korvetten-Kapitän R. von Barry as his Chief of the Staff, to command of Torpedo Flotilla.

First Division.

Coast-Defence Battle-ships—"Habsburg" (flag-ship), "Arpad," "Wien."

Second Division.

Third-class Cruisers—"Szigetvar" (flag-ship), "Aspern," "Leopard."

Torpedo Flotilla.

Third-class Cruisers—"Tiger" (flag-ship), "Magnet," "Meteor," with 15 torpedo-boats.

New Ships.—The new first-class armoured cruiser "E" ersatz "Radetsky," which was laid down in the Imperial Dockyard at Pola in 1900, is to be launched in October. Owing to a change in her armament her cost has been raised from 11,785,000 kronen (£491,041 13s.) to 12,785,000 kronen (£532,708 7s.). Her dimensions are as follows:—Length, 402 feet 6 inches; beam, 62 feet; draught, 21 feet 4 inches on a displacement of 7,500 tons. Protection will be afforded by a water-line belt of Krupp steel, with a maximum thickness of 8·2 inches; the turrets for the guns will have the same thickness of armour, and the casemates for the secondary armament 5-inch; the armoured bulkheads will be 7·6 inches thick, and the armoured deck 1·5 inches. The armament is now to consist of two 9·4-inch guns in a turret forward; one 7·5-inch Q.F. gun in a turret aft; four 7·5-inch Q.F. guns, two forward and two aft, as bow and stern chasers in casemates; four 5·8-inch Q.F. guns on the beam in a central casemated battery; twenty-four 3-pounder and machine guns with two submerged torpedo-tubes. The engines are to develop 12,300-I.H.P., giving a speed of 21 knots, the boilers being of the Yarrow water-tube type. The coal supply will be 820 tons, giving a radius of action of 2,100 miles at 10 knots.

The construction of the new first-class battle-ship "A" ("Erzherzog Karl"), at Trieste, is so much advanced that she will probably be launched next month, instead of next spring, as was originally contemplated, and as soon as the slip is clear the construction of a sister-ship "C" will be proceeded with; "B" (Ersatz "Drache"), another ship of the same class, also building at Trieste, is to be launched in the spring.

Steam Trial.—The new battle-ship "Arpad," a sister-ship to the "Habsburg" and "Babenberg," has successfully completed her trials, and proved herself to be the fastest battle-ship at present afloat. During a six hours' run she maintained a mean speed of 19·65 knots, the contract speed provided for being only 18·5, and the maximum speed attained was 20·12 knots. The ship was designed by Herr Popper, the Chief Constructor of the Austro-Hungarian Navy, and she was built and engined by the Stabilimento Tecnico Triestino, at Trieste, the great firm where so many of the best ships of the Austrian Navy have been constructed, and in whose hands the designing of the engines were left. Steam is provided by 16 Belleville boilers, which have a grate area of 853 square feet, and a heating surface of 31,440 feet. Neither engines nor boilers gave the least trouble during the trials. The "Arpad" has been commissioned and has taken the place in the Evolutionary Squadron of the "Budapest."—*Militär-Zeitung* and *Marine Rundschau*.

FRANCE.—The following are the principal appointments which have been made: Vice-Admirals—P. F. C. Gourdon to command of the Mediterranean Fleet; C. A. Mallarmé to command of 2nd Arrondissement Maritime (Brest).—*Journal Officiel de la République Française.*

Vice-Admiral Gourdon, who succeeds the late Vice-Admiral Pottier in command of the Mediterranean fleet, only attained his present rank on the 1st January last, he is in his sixty-first year, and passes over Vice-Admirals Bienaimé and Touchard, the Maritime Prefects of Toulon and Cherbourg respectively, who are both senior to him and both younger men. Vice-Admiral Bienaimé has been a Vice-Admiral for three and a half years, and this is the second time M. Pelletan has passed him over for service afloat; as he is a very popular and capable officer, the action of the Minister of Marine is being sharply criticised. Vice-Admiral Mallarmé, who succeeds Vice-Admiral Gourdon at Brest, is the junior of his rank, having been promoted only last April. Vice-Admiral Gourdon hoists his flag on the 15th inst. on board the "St. Louis," at Toulon; he has selected Capitaine de vaisseau Marin-Darbel as his Chief of the Staff.

Rear-Admiral Besson struck his flag on the 9th ult. on board the "Brennus," at Toulon, and the flag of Rear-Admiral Jauréguiberry, his successor in the command of the Reserve Division of the Mediterranean Fleet, was hoisted on the "Brennus" on the following day. Rear-Admiral Bellue took over, on the 1st ult., the duties of Chief of the Staff at Toulon.

There has been much comment and some complaint at the delay in filling up the vacancies in the vice-admirals' list occasioned by the regretted deaths of Vice-Admirals de Courthille and Pottier and the retirement under the age clause of Vice-Admiral Dieulouard. It is thought the Minister of Marine is postponing the necessary promotions for the sake of equalising the Budget, giving as a pretext the want of candidates; but, though the choice is small, Rear-Admirals Aubrey de Noë and Richard have the necessary qualifications, and so has Rear-Admiral Besson, who last month relinquished the command of the Reserve Division of the Mediterranean Squadron.

The Minister of Marine has given orders that for the future the ceremony of baptism hitherto performed at the launching of new vessels is to be discontinued. He has also issued a memorandum abolishing the full dress for officers in the French Navy. The report preceding the decree states that the embroidered full dress, which existed in 1853 and was altered in 1902, is little used, and causes unnecessary expense.

The submarines "Farfardet" and "Korrigan" have arrived safely at Bizerta from Rochefort, calling at Algiers *en route*; they were towed the whole distance, the crews being embarked upon the towing vessel. The new torpedo-boat destroyer "Arbalète" has been commissioned at Cherbourg to relieve the "Pertuisane" in the Mediterranean Active Squadron.

The "Suffren" Experiment.—The often-postponed experiment of firing heavy projectiles at the turret of the battle-ship "Suffren" took place off Brest on 18th August. The experiment had for its object the determining of the effect that would be produced by the shock of a heavy projectile striking the turret on the mechanism and various installations for working the guns, and to ascertain also whether any ill-effects would result to the structure of the ship. The fore-turret of the "Suffren" was the one selected for the trial, mounting two 305-mm. (12-inch) guns, and armoured with 26-cm. (10·2-inch) steel plates. To prevent damage to the armour it was covered on the starboard side with a 40-cm. (15·7-inch) plate of steel armour painted white and marked with a black cross, and

above the turret was stretched a large sheet of canvas also marked with a painted cross for the trial shots. On each side was erected splinter-proof shields to prevent accident. The full crew of the ship remained on board during the experiments.

The battle-ship "Masséna" was used as the attacking ship, and the gun was one of 305-mm. (12-inch), similar to those in the "Suffren's" turret, the charge of powder was reduced, and calculated to give a striking energy to the projectile equal to that it would have had had the vessels been at an ordinary fighting distance apart. After the necessary trial shots, two rounds were fired directly at the turret, one in the forenoon and one in the afternoon. The turret was immediately after covered over to prevent the results from becoming public, but it is stated that the covering plate was cracked across vertically and horizontally, and no damage was done to the machinery or structure of the ship, the guns and turret being worked satisfactorily after the trial.

New Ships and Dockyard Notes.—

Cherbourg.—The new first-class armoured cruiser "Jules Ferry," a sister-ship of the "Léon Gambetta," was launched at Cherbourg on 23rd ult. Her principal dimensions are as follows:—Length, 147 metres (482 feet); beam, 22 metres (72 feet); draught of water, 8.20 metres (26.5 feet); with a displacement of 12,600 tons. She is protected by a belt of chrome steel armour 170-mm. (6.6 inches) thick, 7.2 inches wide, reaching to 5 feet below the water-line, tapering to 3 feet 6 inches forward, and 3 feet 2 inches aft, with an upper belt 5 inches thick, tapering to 2.2 inches, reaching up to the main deck, and on the bow to the upper deck; the lower armoured deck is 65-mm. (2.4 inches) thick, and the upper protective deck 1.3 inches thick. There will be a 6-inch bulkhead aft; the conning tower will be 8 inches thick, while further protection will be afforded by a cofferdam running round the ship, and reaching to 16 feet above the water-line. Her armament comprises four 194-mm. (7.63-inch) Q.F., in two turrets, one forward and one aft, protected by 8-inch armour, with 5-inch ammunition hoists; sixteen 165-mm. (6.48-inch), twelve of these mounted in 6-inch turrets, three on each broadside on upper deck, and the remaining four in 4-inch casemates, two forward and two aft; twenty-two 47-mm. (1.8-inch), two 37-mm (1.4-inch) guns, and five torpedo discharges, two of which are submerged. The guns are all worked by electricity, with electric ammunition hoists, all the gun machinery being under armour. The total weight of armour is about 3,800 tons. The engines are to develop 27,500-I.H.P., giving a speed of 22 knots, while steam will be provided by 28 boilers of the Guyot water-tube type, the weight of engines and boilers being 1,808 tons. The normal coal supply will be 1,350 tons, which can be increased to 2,100, giving a radius of action of 10,000 knots at economical speed. She will have a complement of 728 officers and men. The Minister of Marine was present and, in accordance with his recent decision, the ship was launched without any religious ceremony.

The new first-class armoured cruiser "Desaix" has commenced her series of coal consumption trials. She is fitted with Belleville boilers with economisers, which, at her first 24 hours' run at 1,500-H.P., worked most satisfactorily; the actual power developed was 1,508-I.H.P., the coal consumption per H.P. per hour, being 667 gr. (1.33 lbs.), and the consumption per square metre of grate surface per hour being 48 kg. (105.79 lbs.).

Brest.—The new first-class armoured cruiser "Marseillaise" completed her full-speed trial off this port on the 5th ult. successfully. According to the contract, the engines, which were constructed by the

Ateliers et Chantiers de la Loire were to develop 20,500-I.H.P., but 21,820-I.H.P. was actually realised, which gave a speed of 21.6 knots, '6 of a knot over the contract and estimated speed, which is considered very satisfactory. She is fitted with 28 Belleville boilers with economisers. The coal consumption per H.P. per hour was 861 gr. (172 lbs.) and the consumption per square metre of grate surface 168 kg. (370.27 lbs.), results which are also considered very satisfactory; her boilers are also arranged for the partial use of petroleum fuel. The ship was constructed in the dockyard at Brest, her machinery being supplied by the Ateliers et Chantiers de la Loire.

Orders have been received from the Minister of Marine that on the launch of the new battle-ship "Démocratie" next spring, her place on the slip is to be taken by the new first-class armoured cruiser "C 16," which will be of the "Ernest Renan" type.

The new first-class armoured cruiser "Léon Gambetta" will soon be ready to commence her trials; her engines have already been successfully tried alongside the yard, and the work of completing her turrets is being rapidly pushed on.

Lorient.—Owing to the indecision of the Minister of Marine, the new first-class armoured cruiser "Victor Hugo," one of the 1900 programme and a sister-ship of the "Léon Gambetta" and "Jules Ferry," will not be ready for launching at the earliest before next February, although the work on her is now being pushed forward with feverish haste; this ship was to have been built at Toulon, but it was then decided that she was to be constructed at this yard, with the result that she was only laid down and work on her commenced this last spring. Her framing is now all in place, with the transverse and longitudinal bulkheads, and the armoured deck is being fixed. After she is launched, her place on the slip will be taken by the "Jules Michelet," which is a vessel of a similar type, with some slight modifications, as her displacement will be increased by some twenty tons, and her engines are to develop 1,500-I.H.P. more. More important will be the alteration in her armament, as two 9.4-inch guns are to take the place of the four 7.6-inch Q.F. guns, one being mounted in the turret forward and the other aft. The "Jules Michelet" will be a type between the "Gambetta" and the "Ernest Renan," which is to be 1,000 tons more displacement, viz., 13,562, with engines developing 38,000-I.H.P., to give a speed of 23 knots; she was to have been built by contract by the Penhoët firm at St. Nazaire, but she is now to be built at Brest, the Penhoët firm making the boilers and machinery.

The second-class cruiser "Jean Bart" is having bilge keels fitted. She will next spring take the place of the third-class cruiser "Lavoisier" in the Newfoundland fishery squadron.

Rochefort.—Orders have been received from the Minister of Marine for the commencement of the three new torpedo-boat destroyers "Pierrier," "Obusier," and "Mortier," which are to be of an improved "Arquebus" type. The new submarine "Loudre" was launched here on the 25th ult., great secrecy being observed on the occasion.

Toulon.—When coaling at this port recently the battle-ship "St. Louis," of the Mediterranean Squadron, established a record for the French Navy, embarking 550 tons of coal in 3 hours 40 minutes, at the rate of 150 tons per hour. The "Bouvet" came next with an average of 108 tons per hour.

It appears now that yet another attempt is to be made to re-float the "Espingole," and M. Lauthiome, the contractor, is, by an order of the Minister of Marine, to have the use of a tug from the dockyard and

any stores which he may require. The action of the Minister is meeting with some criticism, as it is considered that the work of re-floating the vessel should not again be entrusted to a man who has not the means for carrying out the work.—*Le Yacht, Le Temps, and Le Petit Var.*

ITALY.—The following are the principal appointments which have been made: Vice-Admirals—Bettolo to be Minister of Marine; Frigerio to command of Mediterranean Fleet; Palumbo to Presidency of the Superior Council of the Navy; Puliga to command of First Maritime Department (Spezia); Gualterio to command of Second Maritime Department (Naples); Mirabello to be Vice-President of the Superior Council of the Navy. Rear-Admirals—Renaudi to be Under-Secretary of State for the Navy; Bronchetti to command of the Maritime Department of Tarento; Annovazzi to be Second-in-Command of the Mediterranean Fleet.

The Naval Estimates for 1903-4.—The total estimates for the year 1903-04, from 1st July, 1903, to 30th June, 1904, amount to 127,181,734.22 lire (£4,710,430), as against 127,165,963.72 lire (£4,709,848) for last, showing an increase of £582. There is a decrease of £57,153 in the Extraordinary Estimates on the Shipbuilding Vote; but, as a set-off, there are increases shown in several of the items of the Ordinary Estimates in connection with the *personnel*, one being an increase of £5,186 to the Vote for Officers for 20 additional lieutenants. There is also an increase of £32,000 in the Vote for Coal and Fuel, which amounts to a total of £240,000, and includes the following items:—£16,000 for naphtha; £20,000 for the provision of briquettes and storage of coal in the dockyards; £51,600 for coal for ships abroad (reckoning 34s. 1d. the ton); and £152,400 for coal for the Home Fleet (reckoning 23s. 9d. per ton). It is hoped that the sum now demanded will increase the coal reserve to a point more in accord with the needs of the fleet.

The principal items of the Estimates are as follows:—

ORDINARY ESTIMATES.—GENERAL EXPENSES.

	Proposed, 1903-4.	Revised, 1902-3.
	£	£
Ministry of Marine	54,352	51,621
Pensions, etc	207,111	207,111
Expenditure connected with the Mercantile Marine	354,826	353,553
Total	616,289	612,285

EXPENDITURE FOR NAVAL SERVICES.

Ships Fitting-out, in Reserve, etc.	224,815	224,815
Officers' Corps in the Navy	135,556	130,370
Naval Engineers, etc.	50,037	49,923
Paymasters and Victualling Department	30,333	30,704
Medical Staff	25,556	25,260
Men's Pay	466,667	459,260
Gratuities, etc.	78,000	72,296
Assistant Officials	4,444	4,444
Technical Civil <i>Personnel</i>	51,816	50,496
Minor Dockyard Officials and Staff	54,889	53,852
Police	10,481	11,326
Semaphore and Carrier Pigeon Service	19,815	15,592

	Proposed, 1903-4. £	Revised, 1902-3. £
<i>Personnel of Coast Local Defence</i>	12,964	12,964
Victualling	311,111	300,000
Barracks, Lighting, etc.	7,667	7,704
Hospital Services	20,296	20,296
Honorary Distinctions	555	555
Coal, Oil Fuel, Stores, etc.	285,185	255,555
Pay of <i>Personnel</i> for Building and Fortification Works	3,994	4,130
Training Establishments	12,122	13,037
Hydrographical Service	10,831	10,818
Law Charges	1,185	1,185
Travelling Expenses, etc.	22,222	22,222
Transport of Materials	4,629	4,629
Materials for Repairs of Fleet	206,667	207,926
Labour for Maintenance of Fleet	193,185	211,705
Materials for Maintenance of Ships and Armaments	142,592	151,852
Guns and Armament of Fleet	81,481	81,481
Labour for Maintenance of Guns, etc.	74,928	82,334
Maintenance of Buildings, etc.	92,592	92,592
New Construction	829,630	829,630
Fuel, Stores, Dockyard Plant, etc.	185,185	161,111
Total	3,653,946	3,603,694

EXTRAORDINARY ESTIMATES.—GENERAL EXPENSES.

Half-Pay, etc.	963	963
Pay for Officers and Officials for Special Duties ...	1,890	2,699
Total	2,853	3,662

EXPENDITURE FOR NAVAL SERVICES.

New Construction	193,575	250,728
Coast Defence	7,407	7,407
Torpedo Equipment	7,407	3,703
Total	208,389	261,838

SUMMARY, 1903-4.

Ordinary Expenditure.

General Expenses, etc.	616,289	612,285
Expenditure for Naval Services	3,653,946	3,603,694

Extraordinary Expenditure.

General Expenses, etc.	2,853	3,662
Expenditure for Naval Services	208,389	261,838
Depreciation of Ships in Commission	129,629	129,629
Rent of Crown Lands Used for Naval Purposes ...	99,324	98,740

Grant Total	4,710,430	4,709,848
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The sum of £1,023,205 for new construction is thus apportioned:—
 £148,148 for the first-class battle-ship "Benedetto Brin," completing at Naples, and £111,111 for the first-class battle-ship "Regina Margherita," completing at Spezia; £55,555 for the first-class armoured cruiser "Francesco Ferruccio," completing at Venice; and £3,704 for the completion of two harbour vessels, building by contract; £59,259 each for the new first-class battle-ships, A and B, of the "Vittorio Emanuele" type, building at Spezia and Castellamare respectively; £13,576 for some dockyard and harbour-service vessels; £22,222 for four first-class torpedo-boats; £148,148 for completion of first-class battle-ship "Vittorio Emanuele," at Castellamare and Naples; £185,185 for first-class battle-ship "Regina Elena," building at Spezia; £85,185 for three submarines; £81,482 for two fleet colliers, building by the Orlando firm; £37,040 for two destroyers, building by contract; £37,040 for four further first-class torpedo-boats, to be built by contract; £2,963 for a cistern-ship; and a further £2,963 for two lagoon gun-boats.

For heavy repairs during the year:—£33,333 out of a total of £111,111, for the first-class battle-ship "Italia"; and £14,814, out of a total of £25,185, for the cruiser "Vulcano," ex "Savoia."

According to the Budget the following is the proposed organisation of the Fleet in commission for 1903-4:—

Mediterranean Squadron.

First-class battle-ships—"Sicilia" (flag-ship of Vice-Admiral Frigerio, Commander-in-Chief), "Sardegna" (flag-ship of Rear-Admiral Annovazzi, Second-in-Command), "Regina Margherita," "Re Umberto," "Saint Bon," "Emanuele Filiberto," "Andrea Doria," "Ruggiero di Lauria."

First-class armoured cruisers—"Garibaldi," "Varese," "Carlo Alberto."

Second-class armoured cruiser—"Marco Polo."

Third-class cruisers—"Liguria," "Euridice," "Minerva," "Agordat," "Coatit."

To be seven months in full commission, and five with reduced complements.

Cistern-ship—"Tevere," with six destroyers, to be fully manned for the whole twelve months.

The Trans-Oceanic Squadron (at present in China).

First-class armoured cruiser—"Vettor Pisani" (flag-ship of Rear-Admiral Mirabello, in command).

Second-class cruiser—"Giovanni Bausan."

Third-class cruiser—"Etruria," "Dogali."

The Red Sea and Benadir Division.

Cruiser-corvette—"Cristoforo Colombo."

Third-class cruiser—"Caprera."

First-class gun-boat—"Voluturno."

Despatch-vessel—"Barbarigo."

Stationaire at Constantinople—Despatch-vessel "Sesia."

Special service in the Levant—Third-class cruiser "Tride."

Training Division.

Attached to the Naval Academy for four months—Cruiser-corvette "Flavio Gioia."

First-class gun-boat—"Curtatone," for service with cadets, for eight and a half months.

Gunnery School.

First-class battle-ship—"Lepanto," with the destroyer "Saetta" as tender.

Torpedo-School.

Third-class battle-ships—"Affondatore," "Castelfidardo."

Training-ships for Boys.

Cruiser-corvette—"Caracciolo," with the tenders "Palinuro" and "Miseno."

The value of the Fleet is put down as £19,683,814, while several vessels, including the third-class battle-ship "Terribile," are to be struck off the effective list.—*Stato di Previsione della Spesa del Ministero della Marina.*

New Ships.—According to a Report laid before the Chamber by the Minister of Marine, a considerable delay has been caused in the completion of the new first-class battle-ships "Regina Margherita" and "Benedetto Brin" through the non-delivery of the armour at the contract date; the first-named ship is, however, now so far complete that she has arrived from Castellamare, at Naples, to receive her guns, and it is hoped that she will be ready for commissioning before the end of the year; the "Benedetto Brin," completing at the same yard, will, however, hardly be ready before next May. The new battle-ships "Vittorio Emanuele," building at Spezia, and the "Regina Elena," at Castellamare, are making fair progress, but have also been delayed by the non-delivery of material. The two new battle-ships "A" and "B," to be built at Spezia and Castellamare, respectively, to be named the "Roma" and "Napoli," have not yet had their keels laid, but a good deal of material is ready, and as they are to be commenced immediately, it is hoped that they may be completed by the end of 1906, or at latest by the midsummer of 1907; the "Roma" is to be supplied with Belleville and the "Napoli" with Niclausse water-tube boilers, as the result of the experiments carried out by the "Vareso" and "Garibaldi." Considerable delay has also taken place in the construction of the new first-class armoured cruiser "Francesco Ferruccio," due partly to alterations having been made in the original designs. The first-class battle-ship "Italia," which was launched in 1880, is to be thoroughly repaired and re-constructed, and she has been sent to the dockyard at Tarento for the purpose; she is to receive twelve new locomotive boilers in place of her old ones, among other changes.

Of the three submarines, one, which has been named the "Glauco," is under construction at Venice, no decision has yet been come to as to where the other two are to be laid down; they have been designed by Engineer Ruffini, and his plans have been accepted. Of the eight torpedo-boats, for which money has been voted, four will be built in the dockyards and four by contract. The two destroyers are to be built by the Pattison firm, at Naples, which has had considerable experience in constructing these vessels; they are to be completed by next year, when the Italian Navy will possess 13 of this class.

It was stated recently that three additional first-class battle-ships of the "Vittorio Emanuele" class, to be called the "Duca d'Aosta," "Duca di Genova," and "Duca degli Abruzzi," were to be laid down at Castellamare, Spezia, and Venice, respectively, but no money seems to have been voted for them in the Estimates, and it is now stated that a somewhat smaller type of battle-ship, with greater offensive power, is to be designed, of which a group will be built. The plans for a new cruiser of 3,500 tons, of

the "Puglia" class, have been drawn up, the new vessel being intended for foreign service.

A very successful trial was recently carried out by the first-class armoured cruiser "Garibaldi." With all 24 boilers alight, but without forced draught, the engines during a two hours' run developed 9,400-I.H.P., as against 9,000, which is the contract I.H.P., a speed of 18.6 being obtained; the boilers are of the Niclausse type and gave no trouble, although one-third of the stokers on duty were new recruits.

Wireless Telegraphy.—The training of the personnel for this special duty is engaging the attention of the Minister of Marine. At Spezia a special course of instruction for officers and men has been started, 27 naval officers of different ranks, 2 captains from the Army General Staff, 2 telegraph officials, and 95 petty officers and seamen forming the class. The exercises are carried on from the stations at San Vito, Varignano, Palmaria, and Leghorn; the ships assisting being the battle-ships "Scilia," "Saint Bon," and "Castelfidardo," with the cruiser "Garibaldi."

A New Warning Apparatus.—Experiments are now being carried out with a new apparatus for signalling the approach of submarines and torpedo-boats, the invention of an Italian naval officer. The apparatus consists of two parts, of which one is immersed in the sea, and the other fixed on board a ship. It is claimed for the invention that the approach can be signalled at a distance of some 12 miles, before in fact a ship can be sighted with the naked eye. It is reported that some remarkable results have already been achieved with it, and it is believed that it will be found an effectual protection against submarines and torpedo-boats at night-time.

New Promotion Regulations.—Promotions to the rank of frigate-captain will be for the future three-fourths by seniority and one-fourth by selection. For the rank of corvette-captains the proportion is to be four-fifths by seniority and one-fifth by selection.

The age for retirement for officers of all ranks of the executive branch is fixed at fifty-eight.

The Torpedo-boat Flotilla.—Rear-Admiral Coltelletti, who has been appointed to succeed Rear-Admiral Grenet as head of the torpedo flotilla, will hoist his flag in the despatch-vessel "Messagero"; the second-class cruiser "Etna," which has been acting in that capacity being required for foreign service. There are 97 torpedo-boats attached to the flotilla, distributed as follows:—Genoa, 6; Spezia, 6; Gaeta, 6; Taranto, 12; Civita Vecchia, 31; and at Venice, 4. There were further distributed for the *défense mobile* at the under-mentioned ports the following torpedo-boats:—Spezia, 14; Maddalena, 18; Taranto, 17; Venice, 8; Messina, 18.—*Mittheilungen aus dem Gebiete des Seewesens und Marine Rundschau.*

UNITED STATES.—Naval Ordnance Work.—Admiral O'Neil's Annual Report. Rear-Admiral Charles O'Neil, Chief of the Bureau of Ordnance of the Navy Department, in his annual report, estimates that his bureau will require for the fiscal year ending 30th June, 1904, an appropriation of \$13,182,806.75 divided as follows: For the naval gun factory, \$2,485,000; torpedo station, \$65,000; naval militia, \$60,000; general repairs, \$30,000; contingent, freight, etc., \$75,000; civil establishment, \$46,006.75; public works, new naval magazine at or near Boston, \$300,000; torpedo station, Newport, R.I., \$25,000; naval magazine, Iona Island, N.Y., \$14,200; powder depôt, New Jersey, \$19,600; naval proving ground, Indian Head, Md., \$50,500; shell house, naval magazine, St. Juliens Creek, Va., \$11,000; connecting with

city water mains naval magazine, Fort Norfolk, Va., \$1,500; increase of the Navy, armour, and armament, \$10,000,000.

Admiral O'Neil states that 234 guns were completed at the large gun factory during the year under review. No material change has been made in the method of gun construction, except that the tubes of all guns of late manufacture of and above 6 inches in calibre are reinforced to the muzzle.

The 12-inch guns have been lengthened five calibres in order that the muzzles of the guns will project well clear of the ship's side, when they are trained abeam, in order that the blast from them may not affect the medium calibre guns on the deck below. The only accident of importance to guns afloat during the year happened to the 13-inch gun which was injured on board the "Kearsarge," which has been repaired by the insertion of a lining tube. There has been practically no injury to guns in service due to the erosion of the bore by the powder-gases except in the case of the 13-inch on the "Indiana," which has been replaced. It was fired only 71 times. Six-inch, 40-calibre gun No. 121 has been fired 1,169 times at the proving ground and 65 times elsewhere—a total of 1,234 rounds—and is slightly eroded at the origin of the rifling, and will probably be re-lined.

The bureau has in the press a series of publications in pamphlet form, containing a complete description, with appropriate lithographic reproductions, of all guns, mounts, and ordnance outfits supplied to ships. It is intended, when they are completed, to supply each vessel with such pamphlets, suitably bound, as pertain to her outfit. This work, much of which was originally prepared by the late Lieut. R. D. Tisdale, U.S.N., is in charge of Lieutenant F. K. Hill, U.S.N., attached to the Bureau of Ordnance.

The manufacture of armour, Admiral O'Neil says, has progressed in a satisfactory manner, 7,612 tons having been delivered. No improvement worth speaking of seems to have been made in the quality of armour of late. Recently the armour manufacturers voluntarily made a reduction of 10s. per ton on the royalty for the Krupp process.

So far as quality is concerned, the manufacture of smokeless powder during the year was satisfactory, though the quantity was not entirely adequate. With the exception of ignition and shell powder, no black or other than smokeless powder has been purchased or manufactured for the Navy since the Spanish-American War. The reports from ships and from powder magazines have been favourable, and no unstable powders have been detected. With few exceptions, the ballistic properties of the powder has practically remained unchanged. In a few instances the powder has become drier, and in consequence quicker. Numerous experiments have been conducted at Indian Head with a view to establishing a reduced charge of smokeless powder for large calibre guns, for use in target practice, not only on the score of economy in the expenditure of powder, but to save the wear and tear on the guns and mounts. A number of experiments have been made at Indian Head with a view to determining the best and most expeditious method of drying smokeless powder. Interesting experiments, attended with promising results, have been made with a view to determining the feasibility of imparting some colouring matter to smokeless powder during the process of its manufacture, which would indicate by a change in or by loss of colour, whether the powder was undergoing dangerous decomposition. Important changes have been made in the method of determining the volatiles in smokeless powder, which may also furnish a means of eliminating all outside influences in making stability tests. The quality of smokeless powder manufactured during the year is decidedly superior to that previously manufactured, due to the more thorough purification of the

"pyro," the greater rigidity of the acceptance tests, and to a better knowledge of and a more accurate determination of the best size and shape of the grain and its thickness of wall for each calibre. The adoption of black prismatic in place of fine-grain black powder for ignition charges for smokeless powder has been attended with very satisfactory results, a much less weight of ignition powder being required when prismatic powder is used. The smoke due to the ignition charge is hardly perceptible. In the case of the 12-inch 40-calibre guns, the ignition charge has been reduced from 14 lbs. of fine-grain black powder to $2\frac{1}{2}$ lbs. of black prismatic. In the case of 6-inch guns three prisms of black powder form an efficient ignition charge, and in 4-inch guns one prism. Special forms of pressed black powder for use in guns using brass cartridge cases have been made for experiment. Notwithstanding the utmost care in the manufacture and packing of smokeless powder, and of determining the proper charge for a given muzzle velocity, it is almost certain that slight changes in its ballistic properties will from time to time be observed, due to changes of temperature alone.

The most interesting event during the year in connection with projectiles is the development by the Firth-Sterling Steel Company of a new type of shell, having the perforating power of the regular armour-piercing projectile with the capacity for a large bursting charge. The requirements for these shells on test are that at a prescribed velocity they shall completely perforate, unbroken, a plate of hard-faced armour a calibre in thickness, and then be in condition for effective bursting. A number of shells of this description have been ordered, and the first three lots have successfully passed the requirements. These shells are fitted with soft caps.

Several new sights were designed during the year, and a number are being made for trial. All new guns of and above four inches in calibre are being supplied with sights on both sides, and also the guns of older manufacture as opportunity offers. No thoroughly satisfactory range-finder for use on board ship at sea has been found, though a considerable number of designs have been submitted. A prismatic instrument, designed by Messrs. Searles and Saegmuller, for determining the distance of an object from an elevation where the horizon is visible, has been submitted, and is now under consideration. A Barr and Stroud range-finder has been in use on board the "Albany" for the past year, and has been favourably reported on, and a number of similar ones have been ordered from the manufacturers. Two Zeiss stereoscopic range-finders have recently been received, and are being tested. Lieutenant Cleland Davis, U.S.N., has designed a range-finder intended for use on shore, and an experimental one has been made by the Army for test. The vertical range-finder referred to in the Bureau's last report, while correct in principle, proved to be unsatisfactory in some respects for use on board ship. A new type of Fiske range-finder has been installed on board the "Cincinnati" for test. An ingenious device called a "tracer," has been submitted to and experimented with by the Bureau. It consists of a burning composition encased in the rear end of the base-fuse stock, which is lighted after the projectile leaves the muzzle of the gun, the idea being to follow with the eye the flight of small projectiles fired at night. The device has worked admirably at the proving ground; and a number of 1-pounder shells so fitted have been sent to one of the battle-ships for further experiment and to see what the effect will be when they are fired in the beam of a search-light.

In view of occasional instances in which the plastic pad and split rings used as gas checks in naval guns get cut or burned, thereby causing delay in opening the breech, experimental pads are now being tested which were

subjected to considerably greater pressure than was formerly used in the process of manufacture, in the hope that they will prove to be an improvement upon those now in use.

No new torpedoes have been manufactured. During the past year electric firing devices have been installed in all new torpedo vessels, which seem to fully meet all requirements. Experimental torpedoes, quite different in many important features from those now in service, have been designed, and will soon be tested.

Admiral O'Neil recommends that the 15,000 6-millimetre rifles be retired from the service as soon as practicable, and be replaced by others of the same calibre as is used by the Army, of which the Navy now has 16,720.

Ninety-five 6-inch 30-calibre guns have thus far been converted to rapid-firing guns, leaving 27 guns of this class yet to be converted. About 19 guns a year for the past five years have been converted, at an average cost of \$1,315 each. The use of electric power for operating turret and other ammunition hoists, motors, elevating gear, and rammers for heavy guns, and turret-turning machinery, gives great satisfaction, and is believed to be better adapted for the purpose than any other system.

The remarkable increase of late years which has been made in the energy of guns, due to changes in their dimensions and to the introduction of improved explosive agents for propellants, can best be illustrated by two examples. A few years ago the 6-inch gun was 30 calibres in length, and weighed 48 tons; its muzzle velocity was 2,000 foot-seconds (using brown powder and a 100-lb. projectile), its corresponding muzzle energy was 2,773 foot-tons, and its practicable rate of fire was two and one-half aimed shots a minute; its muzzle energy per minute was therefore 6,932 foot-tons. The latest type of 6-inch gun is 50 calibres in length, and weighs 82 tons; its muzzle velocity (using smokeless powder and a 100-lb. projectile) is 5,836 foot-tons; its practicable rate of fire is eight aimed shots a minute, and its muzzle energy per minute, therefore, is 46,688 foot-tons, or more than 600 per cent. greater than that of the 30-calibre guns using brown powder. The muzzle energy of one round of the present gun, using smokeless powder, is 3,063 foot-tons greater than that of the old gun, using brown powder, an increase of 109 per cent.

Admiral O'Neil points out that it has always been the policy of the United States to provide its vessels of all classes with great battery power; that is, to so arm them that they shall be superior to foreign vessels of equal class in that respect; and that sentiment still prevails; and while we have, in a few instances, subordinated all other elements to speed, it is not likely to occur again; and the consensus of opinion at the present time is in favour of applying large percentages of weight for armour and armament rather than to limit them for the purpose of attaining the last possible fraction of a knot of speed. An extra speed of one knot in a vessel of the "Louisiana" class adds 255 tons to the weight of the vessel, or more than the equivalent of eight 8-inch guns and mounts, or two 12-inch turrets. This extra knot of speed, while, perhaps, very desirable as it is represented by engine and boiler power, would never be realised except on the vessel's speed trials, and in any event would disappear a few months after the ships were docked, cleaned, and painted; whereas their guns and armour will remain as long as the vessels endure. Consequently it has been deemed preferable to have them 18-knot vessels, with greater power of offence and defence, rather than 19-knot ships with a sacrifice of both. Admiral O'Neil is convinced that no mistake has been made in adjusting the speed, armour, and armament of the cruisers "Tennessee" and "Pennsylvania."

High praise is given to Captain E. H. C. Leutze, U.S.N., for his work as superintendent of the Naval Gun Factory since 31st March, 1900. He was unremitting in his efforts to maintain the establishment on a high plane of efficiency; and his administration of affairs has been entirely satisfactory to the Bureau. The average number of employés was 2,115.

The Naval Proving Ground and Smokeless Powder Factory are still in charge of Lieutenant Joseph Strauss, U.S.N., who has held this important and responsible position since 3rd January, 1900, a period of two years and eight months. As he is now under orders for sea duty, the Bureau desires to record its appreciation of his valuable services and painstaking efforts in conducting the numerous and exacting duties devolving upon him. No accidents have occurred in connection with guns. The great increase in the power of guns of recent years, and their greatly extended range, renders a more isolated location necessary for proving and ranging them. A tract of land at Stump Neck, just below Indian Head, and containing about 1,084 acres, has been purchased during the year as a measure of precaution, 'as on one occasion a 13-inch projectile fired from Indian Head landed on the property, the land lying nearly in line of fire when firing at long range. The total quantity of powder made at these works during the year was 496,353 lbs.; 378,500 lbs. of ether, 1,275,492 lbs. of nitric acid, and 516,575 lbs. of guncotton, to be used in the manufacture of smokeless powder, were also produced. The system of nitrating by the use of centrifugal is now in general use, and is preferred to the pot or trough system, as it entails less hardship on the employés. An attempt has been made to use a surveillance magazine, but the automatic regulators for maintaining the temperature at 105° F. failed to work satisfactorily. The average cost of mixed acid, by purchase, is about \$22 per ton, whereas it can be manufactured at a cost of about \$12 40c. per ton. The Bureau believe that a foreman, who is a practical powder maker, should be allowed for the smokeless powder factory at Indian Head, as about 120 men are regularly employed. The manufacture of smokeless powder is a study of itself, and requires familiarity with a special branch of knowledge, which is by no means general.

A class of enlisted men has, as usual, been under instruction in torpedoes, electricity, mining, counter-mining, and diving at the Torpedo Station; but the Bureau regrets to say that it has been one of small proportions, 33 being the total number during the year. The general condition of the station is excellent, and reflects much credit on the officer in charge.

The Bureau renews its recommendations that a suitable site be procured for a naval magazine outside the limits of the navy yard at Portsmouth, N.H., being convinced that the only proper course to pursue is to provide suitable magazine facilities at each port. The most pressing need at Boston is a new naval magazine; and the Bureau renews its recommendations of the last two years that a site, therefore, be secured as soon as practicable. There is no naval magazine worthy of the name east of New York, and immediate steps should be taken to provide for one.

No important developments have taken place in this country during the past year with respect to submarine vessels, and none, so far as can be learned, of any consequence, abroad. Referring to the explosion on the submarine boat "Holland" on 30th July, 1902, Admiral O'Neil states that there was no gasoline on board, and it is quite certain that the explosion was due to the presence of hydrogen gas which had formed after the ventilation of the battery tanks on the preceding day. Accounts of similar accidents on board of foreign-built boats are reported. The Bureau renews its recom-

mentation that officers and men be specially trained for service in submarines, and that enlisted men, when so employed, be given an increase of pay.

Noting the fact that there are no ordnance factories in the United States comparable with the Krupps in point of size and capacity, the Bureau finds it gratifying to know that such as we have do not suffer by comparison with any of them as regards the character of the work performed or the method of performing it.

The Bureau is convinced that the training of gun-pointers is the most important matter in connection with the enlisted *personnel* that the Department has to consider to-day. Once a man becomes an efficient gun-pointer, no pains or expense should be spared to retain his services, for he is the most important man in the ship—the most costly to train and the most difficult to get. The Bureau considers it necessary that a skilful ordnance engineer and designer, from civil life, should be permanently employed in the Bureau, and also one at the Naval Gun Factory.

In conclusion, Admiral O'Neil expresses his thanks for the faithful and efficient service rendered during the year by the *personnel* of the Bureau.
—*U.S. Army and Navy Journal*.

MILITARY NOTES.

PRINCIPAL APPOINTMENTS AND PROMOTIONS, AUGUST, 1903.

Colonel P. J. Maitland, C.B., I.A., an Officiating District Commander of the Second Class in India, is confirmed in that appointment, and to have the temporary rank of Brigadier-General whilst so employed. Colonel J. E. Nixon, C.B., I.A., from an A.Q.M.G., Intelligence Branch in India, to command a District of the Second Class, and to have the temporary rank of Brigadier-General whilst so employed. Lieut.-Colonel and Brevet Colonel H. M. Mason, I.A., to be a Colonel on the Staff in India, and to have the substantive rank of Colonel in the Army. Lieut.-Colonel and Brevet Colonel A. A. Pearson, I.A., to be a Colonel on the Staff in India, and to have the substantive rank of Colonel in the Army. Lieut.-Colonel and Brevet Colonel J. C. Young from h.p. to be an A.A.G. in India and to have the substantive rank of Colonel in the Army. The undermentioned Colonels (temporary Brigadier-Generals), Indian Army, to be Major-Generals:—P. J. Maitland, C.B.; Sir A. J. F. Reid, K.C.B.; O'M. Creagh, V.C., C.B.; W. C. Black; H. E. Penton; G. H. More-Molyneux, C.B., D.S.O. Lieut.-Colonel and Brevet Colonel E. E. Carr, C.B., from h.p., to be Colonel to Command the 21st Regimental District (The Royal Scots Fusiliers). Lieut.-Colonel and Brevet Colonel W. J. H. Frodsham from h.p. to be Colonel to Command the 31st Regimental District (The East Surrey Regiment). Lieut.-Colonel and Brevet Colonel the Hon. C. H. Law, C.B., from h.p., to be Colonel to command the 39th Regimental District (The Dorsetshire Regiment). Colonel F. Ventris from h.p. to be a Brigadier-General on the Staff to command the troops, North China, with the temporary rank of Brigadier-General whilst so employed. Lieut.-

Colonel and Brevet Colonel A. R. Pemberton from h.p. to be A.A.G., Southern District, with the substantive rank of Colonel in the Army. Lieut.-Colonel and Brevet Colonel A. H. Bagnold from R.E. to be Superintendent of Building Works, Royal Arsenal, with the substantive rank of Colonel in the Army. Major-General H. M. G. Purvis to be Colonel Commandant, Royal Artillery. Major-General and Hon. Lieut.-General G. H. Page to be Colonel of the Lincolnshire Regiment. Major-General G. T. Brice to be Colonel of the Leicestershire Regiment. Major-General Sir W. T. Kelly, K.C.B., commanding the Infantry Brigade at Malta, to be Colonel of the Royal Sussex Regiment.

FRANCE.—*The Messimy Scheme*.—The scheme for the re-organisation of the French Army advocated by M. Messimy, which is now being published in the *France Militaire*, has been discussed not only in France but also in the foreign press. It may be of interest to give the opinion of the Austrian journal, the *Reichswehr*, on the subject, as in that journal military matters are, as a rule, treated with discrimination.

The discussions regarding the French War Budget for 1904 have started a scheme for the partial disarmament, or rather the re-organisation of the French Army based on the decrease of its effective and of its duties. The author of the scheme for French disarmament, M. Messimy, was himself an officer, and his proposals are not lacking in weight, although open to discussion. M. Messimy starts, as a basis for his proposals, with the assertion that France, with her peace effective of 740,000 men (?), of which 35,000 are officers, maintains, after Russia, the largest peace effective, that she devotes 35 per cent of her annual disbursements to military expenditure, whilst Russia only devotes 25 per cent., Italy 22 per cent., Germany 21 per cent., and Austria-Hungary 17 per cent., whilst for each million of their population Austria-Hungary raises only 2,670 recruits, Russia 2,812, Italy 3,130, and Germany 4,120 recruits a year, whilst in France 5,620 recruits join the colours annually. This strong contingent was necessary, thinks M. Messimy, whilst France still contemplated a war of revenge; but, with time, this charge has become too heavy for the country, whilst it is disproportionate to the resources of the State and of the nation, and must inevitably lead to ruin, as being out of all proportion to the receipts. M. Messimy considers that as all modern Powers allow the proportion of one soldier to every 100 of the population, France, with her population of 38 millions, should be content with from 380,000 to 400,000 men.

Starting from this maximum effective, M. Messimy details his plan of re-organisation, the general principle of which is to increase the effective of the smaller units but at the same time to proportionately diminish the number of the latter, whilst maintaining the existing 19 army corps in France. The greater portion of the savings must be obtained from reductions of the Corps of Officers. "Our military organisation," he remarks, "is distinguished by an excess or superfluity of its cadres over that of other European Armies; this is a serious inconvenience, both from a budgetary and military point of view, for an unemployed officer quickly decreases in value, and loses both in character and in energy." For example, the infantry, and the same may be said of the other arms, has double the number of field officers to what are necessary in peace-time for commanding the existing units. M. Messimy also considers France has double the number of general officers necessary for her Army. He demands still greater reductions in the *personnel* of non-combatants. Thus

he wishes that the medical service for troops in peace-time should be carried out by doctors undergoing their two years' period of service, or by civil practitioners in the 310 French garrisons; and the same as regards the veterinary service. Similar reductions should be carried out in the *personnel* of the Commissariat and Administration Departments. Military prisons and disciplinary troops should be done away with, military bands and schools diminished, and there should be no longer any orderly officer. M. Messimy also demands disappearance of all useless inspection machinery and guard duties; in short, he proposes to radically change Army service.

The Parisian Deputy, however, who thus shows himself so economically inclined, appears to be only able to regard matters from the peace-time point of view, and appears to completely forget that the ultimate object for which an army exists is warfare, and for that object all the indispensable *personnel* of officers, doctors, commissaries, etc., must be retained ready for use. That in peace-time enough employment cannot be found for general officers, and that doctors have frequently not enough to do, are phenomena that were observed long before M. Messimy took up his crusade, the reason being that this *personnel* is required in war. As regards the reduction of the peace effective, M. Messimy is perhaps correct in his statement that the present French peace effective is abnormal, and that it would be preferable to have fewer and stronger units than to have many that are too small. It should, however, be remembered in France that war has invariably quickly followed reduction of peace strength, as in 1859 and in 1870. Apart from this, perhaps fortuitous coincidence, a decrease in the Army cannot have an advantageous influence on the position of France abroad, and it may be asked if the millions thus saved would compensate for loss of prestige and ability to take the field.—*Précis from the Reichswehr.*

GERMANY.—*Some Details Regarding Mobilisation.*—According to a pamphlet by Lieut.-Colonel Rosentreter, entitled "Zweibund gegen Dreibund," the 7 classes belonging to the German Regular Army and its Reserve will suffice to entirely mobilise, with trained men, not merely the 625 German battalions existing in peace-time, but also 530 other battalions of new formation. The 5 classes of the 1st Levy of the Landwehr will suffice, under the same conditions, to form 600 Landwehr battalions. The necessity for keeping up *depôt* battalions will, as Colonel Rosentreter admits, have the effect that only 340 Reserve battalions and 450 Landwehr battalions of the 1st Levy will be available as field troops. 2,155 field battalions will therefore be formed in Germany by the 12 junior classes. There will still be sufficient trained men available to form 200 battalions of the 2nd Levy of the Landwehr, and 400 Landsturm battalions, but it is doubtful if sufficient cadres for these latter exist.

There are enough cavalry and artillery reservists to form all the units that may be wanted. Difficulty will only arise through the horses, especially from the want or the insufficiency of the training of the requisitioned saddle horses; a certain time would thus elapse before the reserve units were really fit to take the field. For the mobilisation of the 32 Reserve regiments and of the 18 Landwehr regiments of cavalry, Colonel Rosentreter provides for the formation of about 200 newly-raised squadrons. With the 387 squadrons mobilised by the Regular Army units, this would make 587 field service squadrons. As *depôt* troops there would be 94 squadrons of the

Regular Army (one of the 5 squadrons on a peace footing not taken into the field), and 50 *depôt* squadrons for Reserve and Landwehr regiments. The 2nd Levy of the Landwehr would form 50 squadrons, but it may be asked: how would they be mounted?

As regards the artillery, the number of Reserve batteries to be formed depends altogether on the number of battalions put into the field. The proportion of artillery existing in peace-time is relatively high. As a matter of fact, the German Army possesses, in peace-time, 574 field batteries, 42 of which are horse artillery batteries. Colonel Rosenstreter thinks that 48 Reserve and 168 Landwehr batteries of the 1st Levy, available for field operations, would be mobilised. In addition, 120 *depôt* and 32 Landwehr batteries of the 2nd Levy would be formed. The proportion of artillery given to Reserve divisions which would be formed would not be so strong as that for the Regular Army. Reserve divisions of from 16 to 17 battalions would be formed; each of these divisions would receive at least 6 but less than 12 batteries, which latter is the number usually allotted to divisions of Regular troops, which consist only of 12 battalions.

ITALY.—*Grand Manœuvres*.—The Minister of War has issued the following instructions with regard to the grand manœuvres which are to take place this year:—

The grand manœuvres will take place this year in the district of the Vth Army Corps (Verona), from the 28th August to the 6th September. Before the commencement of the operations the two forces will be reviewed separately by the King at their places of concentration, which will be Padua for the Blue, and Belluna for the Red Force. The Blue Force is made up of troops of the IIIrd (Milan) Army Corps, by a division of cavalry and by Alpine troops. The Red Force consists of the Vth (Verona) Army Corps, a brigade of cavalry and a division of mobile militia. The troops will have a complete war kit, minus the jersey, for these manœuvres. Tents will not be issued to troops of the mobile militia except during the time they are encamped in the neighbourhood of Belluna. Officers and men will be provided with white cap covers. Men of the Regular Army will carry the ball cartridges, which are withdrawn in peace-time. The men called out to the colours will not carry ball ammunition.

All corps will only take with them the general equipment *matériel* necessary for the effectives taking part in the manœuvres. Only two pairs of medical canteens and 40 sacks of cartridges per battalion will be taken. No arm chests or clothing chests will accompany the troops. Staffs and departments will use the distinctive lanterns and flags laid down in the field service regulations. The chief director of the manœuvres will make use of the lantern and flag of an army commander. Every man armed with the rifle or musket, belonging to the Regular infantry, bersaglieri, and engineers will carry 36 rounds of blank ammunition, the Alpine troops will have 72, and the mounted troops 24 blank rounds per man. Each battalion ammunition cart will carry 14,760 rounds of blank ammunition, contained in 2 cases and 40 cartridge sacks. The Alpine regimental convoys will carry 8 rounds of blank ammunition per man. Field and horse artillery batteries will have 100 rounds, and mountain batteries 60 rounds per gun. Cartridge wagons and carts, as well as carts of the ammunition columns and army corps artillery parks and of cavalry divisions, will carry their complete regulation load of blank cartridges. The Military Geographical Institute will draw the necessary number of maps.

The direction of the manœuvres will be made up at Treviso, on the 26th August. The Blue Force will be completed, on the same date, at Padua; the Red Force will concentrate, in the neighbourhood of Belluna, on the 27th August. As soon as the mobile militia units are formed, in the formation centres, they will be despatched to Belluna, where the mobile militia unit will assemble for training before the manœuvres and to carry out their musketry practice. It being impossible to foresee the dislocation of the troops, orders regarding it will be given at the proper time. During the marches for concentration and dislocation, as well as during the manœuvres, the rations of the troops will be as follows:—

Beef, 8 oz.

Rice or meal, 5½ oz.

Bacon, ½ oz.

Salt, ¾ oz.

Every day 2 rations of coffee and sugar, or one ration of coffee and one of wine, will be issued to the men.

The director of the manœuvres is Lieut.-General Saletta, Chief of the General Staff. During the manœuvres, the Minister of War, General Ottolenghi, will experiment in various corps with a new system of reduced infantry equipment. In this system the cartridges are so distributed that the weight falls more equally on the waist-belt, and the valise is smaller. The Minister of War will also experiment with a new model valise of flexible canvas, much lighter than the present valise, and costing about a third of the price.

Never since the formation of Italy as a kingdom have the grand manœuvres been of such importance as those of this year, from both a numerical and tactical point of view. At the last grand manœuvres of 1899, 35,000 men and 1,500 officers took part; this year there will be 56,300 men present including officers. The two forces will have, altogether, 18,000 mounted troops and 246 guns, several batteries of which are equipped with the new steel gun. The scheme of the manœuvres is as follows:—

The invading Army (Red) is supposed to have crossed the Alps. It attempts to debouch on the plains of the Piave, in order to take up a position there and to re-organise and to re-victual. The National Army Corps (Blue) concentrates at Padua, and advances to arrest the advance of the enemy and to prevent him from debouching.

The invading army corps is commanded by Lieut.-General Gobbo, and the defensive one by Lieut.-General Fecia di Cossato. The theatre of operations is bounded on the north by the Cadove valley, watered by the River Piave, and on a line extending from Primolano to Ponte delle Alpi. The southern portion is bounded by the sea between the mouths of the Brenta and the Livenza. The two other sides are bounded on the west by the course of the Brenta and on the east by that of the Livenza. The superficial area of the zone of operations is about 4,000 square metres. Treviso, where the greater portion of the railways converge, forms an important strategic point, where the chief direction of the manœuvres is established. The chief object of these manœuvres, in addition to various experiments, is to determine the exact resources and means of defence of this portion of the country. The experiments will deal with the different branches of the organisation of the Army, such as the new regulations for the mobile militia, the employment of automobiles and dogs for ambulance work, ballooning and wireless telegraphy, as well as the soldier's equipment.—*Précis from La France Militaire.*

MEXICO.—*The Mexican Army.*—The Army consists, in peace-time, of 3,500 officers, 31,000 men, 11,000 horses or mules. Its Budget for the financial year 1901-1902 amounted to 14 million pesos or about £2,916,666. The Government studied a scheme embodying personal and obligatory military service and national recruiting by drawing lots, but in consequence of a wish to avoid displeasing the nation, who are at present hostile to conscription, it was compelled to postpone the promulgation of the scheme. The Army, then, is recruited by voluntary engagements of 3, 4, or 5 years; but as this is insufficient, the different Confederate States are obliged to feed the *Depôt* supplies as they are required. These special contingents are called out in each State through the drawing of lots; the Administration, however, largely allows dispensations from service, and generally arranges so that the military service shall fall on the lowest classes of society, thus getting rid of the inconvenient social refuse. The maximum period of service is for 5 years; a man may, however, re-engage for another 4.

A. PEACE FOOTING.

The law of organisation of the 1st July, 1901, clearly lays down that the permanent peace Army should possess the necessary units for the enrolment and mobilisation, under the best conditions, of an effective three times its strength.

1. Compensation of the Permanent Army.

Infantry ...	{	28 battalions of four companies...	112 companies.
		4 battalion cadres of 2 companies ...	8 "
		2 district companies ...	2 "
Cavalry ...	{	14 regiments of 4 squadrons ...	56 squadrons.
		4 regimental cadres of 2 squadrons ...	8 "
		2 Field artillery of 4 batteries ...	8 batteries.
Artillery ...	{	1 Mountain " 4 " ...	4 "
		1 Horse " 4 " ...	4 "
		1 Machine gun company ...	24 guns.
		1 Q.F. small-bore squadron ...	16 "
		1 Artillery Transport of 2 sections.	
Engineers ...	{	1 battalion of 4 companies ...	4 companies.
		1 park ...	1 company.
		1 telegraph company ...	1 "
Transport ...		1 squadron of 2 companies ...	2 companies.
Medical Service		1 company and 1 ambulance train.	

Territorial Military Divisions.—The above-named units are not grouped into brigades, divisions, and army corps in peace-time. The Mexican territory is divided into eleven military zones, three commands, and four districts under an engineer commander (*Jefaturas*). The distinction of forces between these zones and commands is very variable, and is regulated by the executive. In the event of political disturbances, the Government may unite two or more zones under the same command, and reinforce them at the expense of others. The garrisons of ports and of the commands are directly under the War Minister.

2. Special Troops that may be attached to the Permanent Army.

	Officers.	Men.	Horses.	Mules.
Military Mounted Police ...	8	111	111	10
Rural Police...	150	1,200	1,200	—
President's Life Guards ...	3	50	50	—

*Peace Effectives and Organisation of Permanent Army Units.**1. Infantry.*

—		Officers.	Men.	Horses.	Mules.
Company of an Infantry	Higher effective...	9	225	—	7
Battalion of 4 companies	Lower " ...	9	145	—	7
Company of an Infantry	Higher effective	4	127	—	—
Battalion cadre ...	Lower " ...	4	71	—	—
District company...	5	142	—	10

The infantry is armed with the Mauser 7-mm. rifle or with the Remington of the same calibre. Every company is in possession of the following pioneer implements: 8 spades, 4 picks, 2 machetes, 1 hand-axe, 2 hand-spikes, 1 saw.

2. Cavalry.

—		Officers.	Men.	Horses.	Mules.
Squadron of Ordinary	Higher effective ...	8	141	141	8
Regiment	Lower	8	105	105	8
Squadron of Regimental Cadre	6	72	71	6

The men are armed with the Mauser carbine and the sword. Each squadron has a squad of sappers, with the following implements: 2 spades, 2 picks, 1 axe, 1 hand-spike, 2 screw-wrenches, 1 pair of pliers.

3. Artillery.

—		Officers.	Men.	Horses & Mules.	Guns.
Field Battery	8	120	69	6
Mountain Battery	10	86	68	6
Horse Battery	6	74	71	4

The field and horse batteries have 80-mm. guns of the Bange system; the mountain batteries have 70-mm. guns. All fire black powder.

—		Officers.	Men.	Horses & Mules.	Guns.
Machine-gun Company	8	116	50	24

The guns are Colts and Hotchkiss.

—		Officers.	Men.	Horses & Mules.	Guns.
Squadron of Q.F. small-bore guns	11	130	174	16

The guns are of the Hotchkiss and Vickers-Maxim systems.

—		Officers.	Men.	Horses & Mules.	Wagons.
Artillery Transport Section	3	66	148	34

Each section carries 200,000 cartridges and 2,262 shells. All the gunners are armed with the carbine. All the batteries possess an assortment of implements for field works.

4. Engineers.

	Officers.	Men.	Horses and Mules.
Sapper Company	6	145	—
Park	13	102	50
Engineer Company... ..	2	110	—

5. Transport (under the General Staff).

	Officers.	Men.	Horses & Mules.	Wagons.
Company	3	58	186	16
Escort for Topographic Commission	3	90	90	—

6. Medical Department.

	Officers.	Men.	Horses & Mules.	Wagons.
Company of Orderlies	9	281	68	—

The military service of artillery establishments is carried out by two battery cadres, with an effective of 8 officers and 110 men.

B. WAR FOOTING.

The Mexican Army consists in time of war of: 1st, the permanent mobilised Army; and 2nd, the Reserves.

1. *The Permanent Mobilised Army.*—The law on organisation gives very well-defined rules for the change from a peace to a war footing.

In the infantry each battalion is doubled and transformed into a regiment of 2 battalions. The war effective of the company is fixed at 5 officers and 224 men. The battalion cadre becomes successively a battalion at the lower, then at the higher, and finally at the war effective. In the cavalry, each regiment forms 2 new squadrons, and then consists of 6 squadrons, with a strength of 5 officers and 140 mounted men each. In the artillery, each field artillery regiment forms 2 new batteries, and consists of 6 units, at a strength of 6 officers, 121 men, 136 horses and mules; the mountain artillery regiment is doubled, and then consists of 2 battalions of 4 batteries each, with an effective of 6 officers, 116 men, and 94 horses and mules; the horse artillery regiment forms 2 new batteries, and then consists of 6 units, with an effective of 6 officers, 80 men, and 110 horses each. The squadron of Q.F. guns doubles its *personnel* and has 32 guns. The machine gun company also doubles its effective, and has 48 guns. The artillery train constitutes the artillery park in the proportion of 2 ammunition sections per mobilised division. The engineer battalion is also strengthened. Each of its companies is attached to a mobilised division. Should the number of divisions exceed 4, two new companies are formed by means of sappers from the infantry and cavalry.

The engineer park mobilises the bridging equipages and the divisional parks. The telegraph company mobilises the telegraphist detachments. The medical department mobilises the ambulances and the field hospitals.

2. *The Reserves.*—The mobilised Army on a peace footing will be reinforced by the Reserves. Whilst awaiting for a precise recruiting regulation for uniting the contingents, these Reserves will be thus constituted:—*First Reserve:* Rural and urban police of the Federation; active forces and rural and urban police of the Federated States, fiscal police, coast, and frontier police. *Second Reserve:* National Guards, organised in each Federated State, and officered by officers from the Permanent Army and Reserve officers. Finally, the mobilised Army consists of:—

	Officers.	Men.
Infantry (60½ battalions)	1,500	40,000
Cavalry (108 squadrons)	700	15,000
Artillery (224 guns and machine guns)	400	4,500
Engineers	100	1,500
Total	2,700	61,000
Reserves officered and armed	1,000	125,000
Grand total	3,700	186,000

With 32,000 horses and 12,000 mules.

By calling out all the military of the Federated States the Mexican Republic could put a quarter of a million men, out of a population of 14 millions, into the field; but she has not half the armament necessary for that effective.

Grouping of Forces.—All the mobilised units mentioned above will be grouped into regiments, brigades, divisions, and, exceptionally, into army corps. The normal division consists of:—

A staff.

Two infantry brigades of 2 regiments of 2 battalions.

A cavalry brigade of 2 regiments of 6 squadrons.

Four field or mountain batteries.

A horse artillery battery.

A group of Q.F. small guns attached to the cavalry.

A variable number of machine guns.

An engineer company.

A divisional engineer park.

A divisional artillery park.

A telegraph section.

A police section.

An ambulance.

A field hospital.

An administrative convoy carrying 4 days' rations.

The approximate effective of the division amounts to 500 officers and 9,000 men. The Army may be approximately mobilised into 4 or 5 normal divisions, and 4 or 5 mixed brigades. When 2 divisions are united as an army corps, each of them retains 2 cavalry squadrons for reconnoitring, etc.; the other squadrons form the cavalry of the army corps.—*Revue Militaire.*

UNITED STATES.—*Organisation of General Staff.* The following order has been received from the War Department and is published for the information and guidance of all concerned :—

War Department, 3rd August, 1903.

The President directs that the following additional Regulations for the Army, numbered from 1 to 20 inclusive, be published for the government of all concerned, and that they be strictly observed :—

GENERAL STAFF CORPS.¹

Composition.

1. The General Staff Corps, created in conformity to the act of Congress approved 14th February, 1903, is composed of officers of the grades and numbers specified in said act, detailed for service in said corps for a period of four years unless sooner relieved, under rules of selection prescribed by the President. Upon being relieved from duty in the General Staff Corps officers return to the branch of the Army in which they hold permanent commissions, and, except in case of emergency or in time of war, are not eligible to further detail therein until they have served for two years with the branch of the Army in which commissioned. This ineligibility does not apply to any officer who has been relieved prior to the expiration of four years' duty with the corps; but such officer will become ineligible as soon as he shall have completed a total of four years of said duty. While serving in the General Staff Corps officers may be temporarily assigned to duty with any branch of the Army.

Relations.

2. The law establishes the General Staff Corps as a separate and distinct staff organisation, with supervision, under superior authority, over all branches of the military service, line and staff, except such as are exempted therefrom by law or regulations, with a view to their co-ordination and harmonious co-operation in the execution of authorised military policies.

Duties.

3. The General Staff Corps under the direction of the Chief of Staff, is charged with the duty of investigating and reporting upon all questions affecting the efficiency of the Army and its state of preparation for military operations, and to this end considers and reports upon all questions relating to organisation, distribution, equipment, armament and training of the military forces (Regulars, Volunteers, and Militia), proposed legislative enactments and general and special regulations affecting the Army, transportation, communications, quarters and supplies; prepares projects for manoeuvres; revises estimates for appropriations for the support of the Army and advises as to disbursement of such appropriations; exercises supervision over inspections, military education and instruction, examinations for the appointment and promotion of officers, efficiency records, details and assignments, and all orders and instructions originating in the course of administration in any branch of the Service which have relation to the efficiency of the military forces; prepares important orders and

¹ For organisation of the General Staff Corps and the general duties assigned thereto and to the Chief of Staff, see Act of Congress approved 14th February, 1903. (G.O. 15, A.G.O., 1903.)

correspondence embodying the orders and instructions of the President and Secretary of War to the Army; reviews the reports of examining and retiring boards; and acts upon such other matters as the Secretary of War may determine.

4. The General Staff Corps, under like direction is further charged with the duty of preparing plans for the national defence and for the mobilisation of the military forces (including the assignment to armies, corps, divisions, and other headquarters of the necessary quota of General Staff and other staff officers), and incident thereto with the study of possible theatres of war and of strategic questions in general; with the collection of military information of foreign countries and of our own; the preparation of plans of campaign, of reports of campaigns, battles, engagements and expeditions and of technical histories of military operations of the United States.

5. To officers of the General Staff Corps are committed the further duties of rendering professional aid and assistance to the Secretary of War and to general officers and other superior commanders and of acting as their agents in informing and co-ordinating the action of all the different officers who are subject under the provisions of law to the supervision of the Chief of Staff.

They perform such other military duties not otherwise assigned by law as may from time to time be prescribed by the President. Under the authority here conferred officers of the General Staff Corps are intrusted with the executive duties hereinafter indicated.

6. Officers of the General Staff Corps assigned to duty with commanders of armies, corps, divisions, separate brigades, territorial divisions and departments are collectively denominated the General Staff serving with troops. They serve under the immediate orders of such commander; those not so assigned perform duty under the immediate direction of the Chief of Staff, and constitute the War Department General Staff.

7. The foregoing assignment of duties to the General Staff Corps does not involve in any degree the impairment of the initiative and responsibility which special staff corps and departments now have in the transaction of current business.

WAR DEPARTMENT GENERAL STAFF.

8. To facilitate the performance of its duties the War Department General Staff will be arranged in divisions each under the direction of an officer of the General Staff Corps to be designated by the Chief of Staff. Each division will be subdivided into sections as may be directed by the Chief of Staff.

9. The War Department General Staff in its several divisions and sections stands in an advisory relation to the Chief of Staff in the performance of the duties herein devolved upon him. The distribution of duties to the several divisions and sections is regulated by the Chief of Staff.

CHIEF OF STAFF.

Relations and Selections.

10. Under the act of 14th February, 1903, the command of the Army of the United States rests with the constitutional commander-in-chief, the President. The President will place parts of the Army, and separate armies whenever constituted, under commanders subordinate to his general command; and, in case of exigency seeming to him to require it, he may place

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the whole Army under a single commander subordinate to him; but in time of peace and under ordinary conditions the administration and control of the Army are effected without any second in command.

The President's command is exercised through the Secretary of War and the Chief of Staff. The Secretary of War is charged with carrying out the policies of the President in military affairs. He directly represents the President and is bound always to act in conformity to the President's instructions. Under the law and the decisions of the Supreme Court his acts are the President's acts, and his directions and orders are the President's directions and orders.

The Chief of Staff reports to the Secretary of War, acts as his military adviser, receives from him the directions and orders given in behalf of the President, and gives effect thereto in the manner hereinafter provided.

Exceptions to this ordinary course of administration may, however, be made at any time by special direction of the President if he sees fit to call upon the Chief of Staff to give information or advice, or receive instructions, directly.

Wherever in these regulations action by the President is referred to, the action of the President through the Secretary of War is included, and wherever the action of the Secretary of War is referred to the Secretary of War is deemed to act as the representative of the President and under his directions.

The Chief of Staff is detailed by the President from officers of the Army at large not below the grade of brigadier-general. The successful performance of the duties of the position requires what the title denotes—a relation of absolute confidence and personal accord and sympathy between the Chief of Staff and the President, and necessarily also between the Chief of Staff and the Secretary of War. For this reason, with any reflection whatever upon the officer detailed, the detail will in every case cease, unless sooner terminated, on the day following the expiration of the term of office of the President by whom the detail is made, and if at any time the Chief of Staff considers that he can no longer sustain between the President and the Secretary of War the relations above described, it will be his duty to apply to be relieved.

The provisions of paragraph 1, regarding the redetail of an officer who has not completed a total of four years' service, apply to the Chief of Staff.

Duties.

11. The Chief of Staff is charged with the duty of supervising, under the direction of the Secretary of War, all troops of the line, the Adjutant-General's, Inspector-General's, Judge Advocate General's, Quartermaster's Subsistence, Medical, Pay and Ordnance Departments, the Corps of Engineers and the Signal Corps. He performs such other military duties not otherwise assigned by law as may be assigned to him by the President.

12. The supervisory power vested by statute in the Chief of Staff covers primarily duties pertaining to the command, discipline, training and recruitment of the Army, military operations, distribution of troops, inspections, armament, fortifications, military education and instruction, and kindred matters, but includes also, in an advisory capacity, such duties connected with fiscal administration and supply as are committed to him by the Secretary of War.

In respect to all duties within the scope of his supervisory power, and more particularly those duties enumerated in this and the following paragraph, he makes and causes to be made inspections to determine

defects which may exist in any matter affecting the efficiency of the Army and its state of preparation for war. He keeps the Secretary of War constantly informed of defects discovered, and under his direction issues the necessary instructions for their correction.

13. Supervisory power is conferred upon the Chief of State over all matters arising in the execution of acts of Congress and executive regulations made in pursuance thereof relating to the Militia. This supervision is especially directed to matters of organisation, armament, equipment, discipline, training and inspections. Proposed legal enactments and regulations affecting the Militia and estimates for appropriations for its support are considered by him, and his recommendations submitted to the Secretary of War.

14. The Chief of Staff is charged with the duty of informing the Secretary of War as to the qualifications of officers as determined by their records, with a view to proper selection by special details, assignments and promotions, including detail to and relief from the General Staff Corps; also of presenting recommendations for the recognition of special or distinguished services.

15. All orders and instructions emanating from the War Department, and all regulations are issued by the Secretary of War through the Chief of Staff and are communicated to troops and individuals in the military service through the Adjutant-General.

16. The assignment of officers of the General Staff Corps to stations and duties is made upon the recommendation of the Chief of Staff.

17. In case of absence or disability of the Chief of Staff the senior officer of the General Staff present for duty in Washington shall act as such chief unless otherwise directed by the Secretary of War.

18. In the performance of the duties hereinbefore enumerated and in representation of superior authority, the Chief of Staff calls for information, makes investigations, issues instructions, and exercises all other functions necessary to proper harmony and efficiency of action upon the part of those placed under his supervision.

THE GENERAL STAFF SERVING WITH TROOPS.

19. The general staff of a command consists of general staff officers of such number and grades as may be assigned to it on the recommendation of the Chief of Staff.

20. General Staff officers serving with troops are employed under the direction of the commanders thereof, upon the duties hereinbefore prescribed for officers of the General Staff Corps and provided by the second section of the act of 14th February, 1903, and they shall perform such other duties within the scope of general staff employment as may be directed by such commanders. They will not be assigned to other than general staff duties except by special authority of the Secretary of War.

ELIHU ROOT, Secretary of War.

By command of Lieutenant-General YOUNG :

H. C. CORBIN, A.G., Major-General, U.S.A.

—*U. S. Army and Navy Journal.*

NAVAL AND MILITARY CALENDAR.

AUGUST, 1903.

- 1st (Sat.) H.M. the King presented new colours to the 2nd Bn. Royal Irish Regiment and to the 2nd Bn. Royal Munster Fusiliers, at Cork.
- 3rd (M.) H.M.S. "Hyacinth" left Plymouth for the East Indies.
- " " Announced in the House of Commons that ammunition of greater stopping power than the service pattern had been sent out to Somaliland.
- 4th (T.) H.M.S. "Pique" paid off at Devonport.
- 7th (F.) The Bulgarians were routed by Turkish troops at Sorovitch in Macedonia.
- 13th (Th.) Announced that the Russian territory in the Far East had been constituted a Vice royalty, with Admiral Alexeieff as first Viceroy.
- 20th (Th.) The ex-Sultan of Sokoto and 700 natives were killed in action by the British in Nigeria.
- 22nd (Sat.) Launch of first-class armoured cruiser "Pennsylvania," from Cramp's Yard, Philadelphia, for U.S. Navy.
- " " H.M.S. "Montagu" sailed for the Mediterranean.
- " " The Marquis of Salisbury died at Hatfield.
- 23rd (S.) Launch of first class armoured cruiser "Jules Ferry" at Cherbourg for French Navy.
- 24th (M.) Launch of first class battle-ship "Dominion" at Devonport.
- 25th (T.) Report of the Royal Commission on the late War in South Africa was issued.
- 27th (Th.) Launch of first-class cruiser "Oleg" and third-class cruiser "Jemtschug" from New Admiralty Yard, St. Petersburg, for Russian Navy.
- " " H.M.S. "Ramillies" arrived at Portsmouth from Mediterranean.
- 29th (Sat.) Launch of first-class battle-ship "Slava" from the Baltic Ship building Yard, St. Petersburg, for Russian Navy.
- " " H.M.S. "Goliath" arrived at Devonport from China.

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NOTICES OF BOOKS.

Notes and Reminiscences of a Staff Officer relating to the Waterloo Campaign and to St. Helena, during Napoleon's Captivity. By Lieut.-Colonel BASIL JACKSON. Edited by R. C. SEATON, M.A. London: John Murray, 1903.

Lieut.-Colonel Basil Jackson died 14 years ago at the age of 94. This narrative of his personal experiences in the great events which brought about the final fall of Napoleon has now been re-published, by permission of his daughter, Mrs. Simcoe, of Welford, Devon. The notes first saw the light in the *United Service Magazine* in October, 1843.

Though fragmentary, these recollections are of great interest as the records of personal impressions from notes made during, or soon after, the occurrences they describe, and, as the author's style is frank and simple, and at the same time lively and amusing, they are very readable.

Born in 1795, the author entered the Royal Military College in 1808, when 13 years old. General the Hon. W. Harcourt (afterwards Lord Harcourt) was the Governor, and Colonel Gaspard le Marchant (afterwards Commander-in-Chief of the Madras Army) Lieut.-Governor. At that time the Duke of York was Commander-in-Chief, Lord Castlereagh was Secretary of State for War and the Colonies, and Sir Arthur Wellesley was Chief Secretary for Ireland. In July, 1811, Jackson was gazetted an ensign in the 26th Foot. He was then only 16, and, on the recommendation of the Governor of the Royal Military College, he was at once transferred to the Royal Staff Corps.

This was a small corps of infantry officers and men attached to the Quartermaster-General's department in the field, who more specially instructed in engineering duties, surveying, etc. Colonel Jackson speaks favourably of the military instruction he received at Sandhurst, and he probably had paid especial attention to his studies in drawing and surveying, for, though the narrative gives us no particulars of his first two years' service, and we do not know whether he served in the Peninsula, where the Duke of Wellington was then pursuing his victorious career, in 1813 we find him placed on the staff of the Quartermaster-General for service with the troops in Holland and Belgium, under the command of Sir Thos. Graham, Lord Lynedoch.

He became, in the course of his reconnaissance duties that year, well acquainted with the country round Brussels, which stood him in good stead in the Waterloo days. Earl Cathcart, the Quartermaster-General, was succeeded in 1814 by Sir Hudson Lowe, whom the author describes as an active, diligent, and accomplished officer, but who was, unfortunately for young Jackson, withdrawn for other service a few weeks before the battle of Waterloo. He saw a good deal of the Prussian staff at Liège, and humorously describes the attempts that our officers made to get up fox hunting, but the Belgian foxes did not understand that they were expected to run away from the hounds, and the farmers objected to their fields being ridden over. A little later there was willy-nilly much riding over their fields. The author's description of the gay life in Brussels bears out Thackeray's narrative in "Vanity Fair." He was the officer employed under Sir William Delancy (who was mortally wounded at Waterloo) in writing the orders for the tardy concentration of the troops on the 15th June, about which he has some severe things to say, and was just in time to see the close of the action of Quatre Bras. He does but scanty justice to the Belgian senior officers, to whose prompt judgment the check at Quatre Bras is largely due, and throughout his narrative of the battle of Waterloo his judgment of the conduct of the Belgian troops is somewhat harsh. Boulger and other historians have shown that their difficulties were greater than most English officers had been willing to allow, though Professor Oman has written strongly against them. Col. Jackson's description of the great Duke, after Quatre Bras and on the following days, is simple and graphic, and his personal adventures on the field of Waterloo, of which he makes no attempt to give a full description, are full of interest. He carried the message to Sir Thomas Picton (who was killed at Waterloo) from the Duke, ordering the retreat from Quatre Bras. His account of certain phases of the great battle, though desultory, is spirited and full of incident, and bears the impress of being a truthful story, as far as it goes, of that wonderful hammer-and-tongs affair. He was all over the field at one time or another, so a good insight is given into some of the chief episodes of the great drama. It will not be pleasant

for our German friends to read that Colonel Jackson relates his having seen the Prussian soldiers bayoneting the wounded French soldiers on the battle-field, but the feeling of revenge, after years of Napoleon, was strong, and the defeat of Ligny was fresh. The author was a witness of the meeting of Wellington and Blücher on the evening of Waterloo, which, he says, took place just beyond "*La belle Alliance*," and only lasted ten minutes.

We will not follow Colonel Jackson to St. Helena, where he was, at the age of 20, appointed to Sir Hudson Lowe's staff; but recommend the perusal of his narrative of the events and intrigues there. He, of course, defends his patron, Sir Hudson, in his conduct as Governor, but does not do so indiscriminately, and his conversations with the French officers and others of Napoleon's *entourage* are curious and interesting, while the narrative of his interview with Napoleon himself will attract the reader from the personal account of the fallen Emperor. Altogether, we can recommend this volume as a readable and interesting contribution to the events of those stirring times by an eye-witness, who makes no effort at book making.

Colonel Jackson, when a Major, published an excellent work on military surveying, which was for a long time the text book at the Royal Military College at Sandhurst, and at the Military College at Addiscombe. Based on scientific works, such as Frome, Simms, and others, it was an admirable guide to practical military topography, and was, to a great extent, the model upon which the later works were framed.

The Bombay Artillery List of Officers, etc. Compiled by Colonel F. W. M. SPRING, R.A. London: William Clowes and Sons, 1902.

Under this modest title, the author, himself a member of this famous old corps, which he joined in 1858, some four years before its amalgamation with the Royal Artillery, has produced a most valuable and interesting Regimental Record. Like the Bengal and Madras Artillery Corps of the old East India Company, the Bombay Corps took its full share in the long series of military operations extending over more than a century, which had for their result the acquisition and consolidation of our Indian Empire. Although the Company's Army disappeared with the transfer to the Crown of our Great Dependency after the Mutiny, it is only fitting that the memory and tradition of three such splendid corps, as the Bombay, Madras, and Bengal Artillery, should be recorded and perpetuated.

From the first muster-roll apparently in existence, which dates as far back as 1st December, 1708, there appears to have been a small artillery detachment assigned to the several companies of the Bombay Regiment (now the 2nd Battalion Royal Dublin Fusiliers) which were known as a whole under the curious designation of the "Gun-room crew." A list of the gunners, who were also styled "Gentlemen-at-Arms," is given from 1710, when the chief post became that of "Master-gunner" until 1748, when directions were received from home for the organisation and formation of these several details into a regular artillery company. During the next few years three additional companies were raised, and in 1768 the force was formed into a battalion under the command of a lieutenant-colonel; in 1820 the force was still further increased and a second battalion formed, in 1826 a third, and in 1846 a fourth battalion were added. In 1811 the first troop of Horse Artillery was raised, which by 1824 had increased to four troops. It is interesting to note that the

King in 1901 graciously decided that the two new Horse Artillery batteries, Y and Z, should be considered as reformed from the 2nd and 4th troops of the old Bombay Horse Artillery respectively to perpetuate their memory and carry on their traditions, while the 3rd troop is now represented by the celebrated Q Battery, R.H.A., which so distinguished itself during the recent war in South Africa. There is a carefully compiled record of the various campaigns, battles, etc., in which the Corps took part from 1748, while the author gives a full list of the officers from the same date with, wherever he has been able to do so, a record of their services, which must be both interesting and valuable to their descendants. Colonel Spring is to be heartily congratulated on the admirable way in which he has performed the task he set himself and which probably would not have been as complete as it is, but that it has evidently been with him a labour of love.

PRINCIPAL ADDITIONS TO LIBRARY DURING AUGUST, 1903.

Professional Papers for the Corps of Royal Engineers for 1902. Vol. XXVIII. 8vo. Edited by Captain A. T. MOORE, R.E. (Presented.) (W. & J. Mackay & Co.) Chatham, 1903.

Reminiscences, 1808-1815, under Wellington. By Captain W. HAY. Edited by Mrs. S. C. J. WOOD. 8vo. (Presented.) (Simpkin, Marshall, Hamilton, Kent & Co., Ltd.) London, 1901.

Transactions, Institution of Naval Architects. Vol. XLIV. Edited by Mr. R. W. DANA. Demy 8vo. (Presented.) London, 1902.

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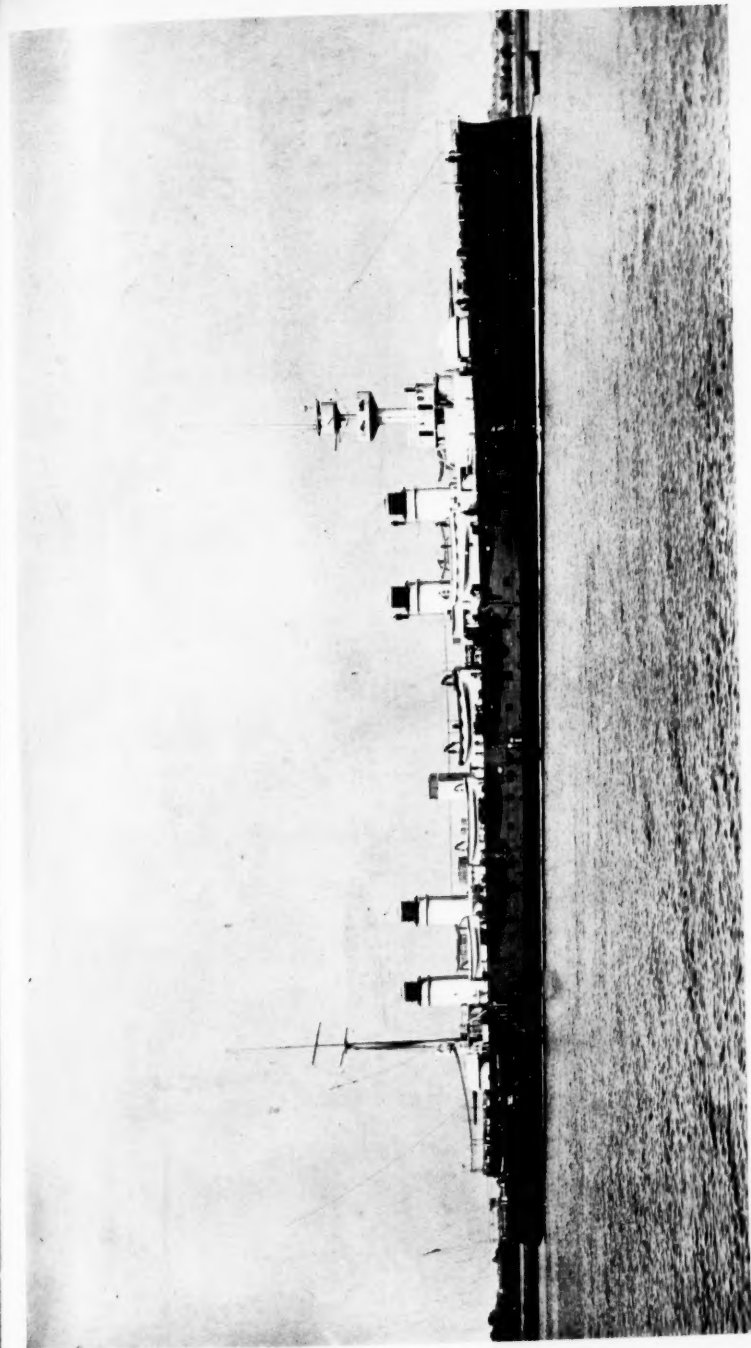
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The Militia and Volunteer Officer's Guide to Promotion. New Edition, revised. By Major S. T. BANNING. 3s. 6d. 8vo. (Presented.) (Gale & Polden.) Aldershot, 1903.

Historical Records of the XIII. Madras Infantry. Compiled by Lieutenant R. P. JACKSON, Adjutant XIII. Madras Infantry. 8vo. (Presented.) (W. Thacker & Co.) London, 1898.



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NAVAL PRIZE ESSAY, 1903.

All Essays must be received by the Secretary by 14th November. The subject is as follows:—

"In the existing state of Development of War-Ships, and of Torpedo and Submarine Vessels, in what manner can the Strategical Objects, formerly pursued by means of Blockading an Enemy in his Own Ports, be best attained?"

LECTURE NOTICE.

November 9th (Monday). — "Military Education." By Lieut.-Colonel F. N. Maude, late R.E., *p.s.c.*, Commanding 1st Hants, R. Eng. (Vols). The Chair will be taken by Spenser Wilkinson, Esq.

ERRATUM.

September Journal: Page 1074, Line 28. For "Muzzle Velocity" read "Muzzle Energy."